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EVALUATING THE ECONOMIC IMPLICATIONS OF LOCAL CONTENT IN NIGERIA'S SUSTAINABLE HOUSING DEVELOPMENT MANTRA: A COST-BENEFIT APPROACH

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Abstract

This paper sets out to evaluate the economic implications of local contents in Nigeria's sustainable housing development mantra using a cost-benefit approach. It notes that there is a big issue of housing affordability in Nigeria due largely to the rising cost of housing construction and the cost of building materials that have remained on the rise. The issue of housing accessibility is also of great concern in Nigeria. It is suggested that over reliance on foreign building materials, manpower, methods and equipment contribute to the high cost of construction in the country. The paper considered the cost effectiveness of incorporating local content in sustainable housing development in Nigeria. It adopts deskwork research approach; relying on secondary data to reach its conclusion. It also explores the cost-benefit approach for adopting local content policies in sustainable housing development, and concludes that the benefits for adopting local content policies in sustainable housing development in Nigeria are many. The costs involved in implementing local content policies are surmountable thereby encouraging the implementation of such a policy in the country. The economic implications for adopting this policy are found to be job creation opportunities, economic diversification, cost saving, increased local investment, reduction in poverty among others. The study recommends a people-minded political leadership for the country; leadership that could be innovative enough to consider the people's welfare as prime. Such leadership will consider various ways of making life easier and cheaper for the citizenry.

Key words: Economic Implications, Local Content, Sustainability, Housing Development, Cost-Benefit

1.0 INTRODUCTION

1.1 Background to the Study

The mantra of sustainable housing development has been there since the turn of the ongoing millennium. Housing is obviously one of man's basic needs aside food and clothing. This basic need has often been seen as inadequate and so it is often unaffordable because of the ever increasing population of the urban centres across the country. Many researchers have written articles on different areas of housing need and housing shortage in Nigeria and suffice it to say that governments' responses to the problem have hardly been enough.

According to NBS (2022), "the term 'sustainable housing' is generally used to describe sustainable development as it applies to the housing industry, incorporating:

i. Creating less waste (not just through surplus materials but through optimal use of land and time, including minimizing impacts on local biodiversity).
ii. Providing opportunities for increased materials reuse and recycling.
iii. Focusing on refurbishing older assets and repurposing already-existing buildings as fresh housing stock.
iv. Taking advantage of renewable energy sources, including natural site features (natural ventilation, lighting, etc).
v. Lowering lifecycle environmental impacts and costs.
vi. Improving reliability, lowering maintenance needs and costs, and creating greater user satisfaction."

Sustainable housing refers to homes and buildings that are designed, constructed, and operated in a way that minimizes their environmental impact and promote social and economic sustainability. Sustainable housing development is key to unlocking the potentials in the sub sector. According to The Sweaty Penguin (2022), "for many people, sustainable housing brings to mind futuristic buildings that look like a spaceship, with zero-water-pressure shower heads and toilets. In reality, sustainable houses can offer carbon emission cuts, water conservation, and long-term cost savings while looking quite normal…"

Local content in the context of this study considers local input resources that could enable a reduction in the cost of the materials and human resources costs. Studies have also shown that most of the housing resources inputs are either of foreign nature or a conversion of the local materials into modern form, to take the cost out of the reach of the low income earners. Okwaraejesu (2024) listed the local building materials including; mud, timber, straw, stone, bricks, slate, lead, stucco, grass, and bamboos. Nnadi and Egeonu (2023) added cow dung on the list as shown above. It is note-worthy that local content might include materials (using locally sourced building materials like cement, steel and wood), labour (using local workers, contractors, and construction companies), services (using local architects, engineers, and project managers), technology (using local technology and innovation in construction and design), and supply chain (supporting local suppliers and manufacturers of construction materials and services)".

Local content project in sustainable housing development may have some far reaching economic, social and environmental implications. That's why this study is apt. It considers the costs involved in the local content experiment and measures it against the benefits thereof.

1.2 Statement of the Problem

Costs involved in constructing houses have risen and are still rising in Nigeria. The housing input resources like the intellectual know-how (manpower), the materials and site for construction have all gone beyond the reach of the average Nigerian. This development negatively affects the sustainable housing development mantra of the various governments in Nigeria. Private housing estates development has increasingly become the norm as a result of government's inability to provide adequate and affordable housing for the vast majority of Nigerians. Individual housing development has hardly been easy to achieve these days. This is one reason why abandoned (incomplete) housing projects litter every corner of our cities and towns.

The situation is made worse by the poor perception of an average Nigerian of the local content materials within the country. The multiplier effect of this is the acute shortage of housing accommodation (housing deficit), adoption of inferior building materials, regular but costly cosmetic architecture (practice of designing or altering buildings or structures primarily for aesthetic purposes rather than focusing on functional or structural integrity), building

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failures/collapse, unemployment for the local professionals, under-utilization of natural resources and indeed crippling of the local building materials industries.

1.3 Aim and Objectives of the Study

The main trust of this paper therefore is to evaluate the economic implications of local contents in Nigeria's sustainable housing development mantra, given the high cost of building materials and construction in the country, this will enable some relevant recommendations made out of it. The following are the objectives of the study;

i. Assess the economic implications of local content in the sustainable housing development mantra in Nigeria,
ii. Evaluate the cost-effectiveness of incorporating local content in sustainable housing development in Nigeria,
iii. Investigate the impact of local content on the affordability and accessibility of sustainable housing in Nigeria,
iv. Identify strategies for optimizing local content in sustainable housing development in Nigeria,
v. Provide policy recommendations for promoting local content in Nigeria's sustainable housing development.

2.0 REVIEW OF LITERATURE

2.1 Theoretical Framework

This study is anchored on two theories- local content theory and sustainable development theory.

i. Local Content Theory

This refers to indigenous resources, skills, traits and capacities including natural endowments of people in a particular area (IGI Global, 2024). Local content, according to NRGI Reader (2015), "is the value that an extraction project brings to the local, regional or national economy beyond the resource revenues". Local content theory suggests that the use of local content in economic development projects can lead to economic growth, job creation, and improved livelihoods. According to Kazzazi and

Nouri (2012), "local content should be defined in terms of value addition in local country (by local staff, local materials, local services and facilities) rather than in terms of ownership of the company performing the value added activities."

In the context of this study, this theory is leveraged to look at its economic benefits, the cost implications of its implementation, its impact on affordability and accessibility to sustainable housing development, its potential economic gains, strategies and policy recommendations.

ii. Sustainable Development Theory

Sustainability is a term that was coined in a way back in 1987 in the Brundtland Report (Chang, Zuo, Zhao and Zillante, 2017) the Brundtland Report defines sustainable development as;

> *development that meets the needs of the present without compromising the ability of future generations to meet their own needs…A process of change in which exploitation of resources, the direction of investments, the orientation of technological development and institutional change are all harmony and enhance both current and future potential to meet human needs and aspirations* (Omaka, 2012 pp.108).

Sustainable development is an approach to growth and human development that aims to meet the needs of the present without compromising the ability of future generations to meet their own needs, even in housing development. This is why it is pertinent in this particular study. Three core elements are cardinal for the achievement of the sustainable development mantra- economic growth, social inclusion and environmental protection (United Nations, 2023). By and large, this theoretical framework emphasizes the importance of balancing economic, social and environmental considerations in development projects. How local content will help to achieve these three considerations and achieve affordable and accessible housing is the crux of this study.

2.2 Cost-Benefit Analysis (CBA)

Cost-benefit analysis (CBA) is a systematic process used to compare the advantages (benefits) and disadvantages (costs) of a decision, project, or policy. It is a crucial tool for evaluating the economic viability and feasibility of a project or investment. According to Evans and Evans (2007), cost-benefit analysis is "a decision-making tool that evaluates all the hard-dollar and economic consequence costs associated with pursuing a course of conduct against all the hard-

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dollar and economic consequence benefits reasonably to be expected from that decision, and comparing the two to see if they make economic sense".

According to Ogunba and Ajayi (2018), "the CBA idea originated with Jules Dupuit (a French Engineer) in 1848 and was later formalized in the UK by Alfred Marshall. In the US, impetus to the use of CBA came as a result of the Federal Navigation Act of 1936, which required that the US corps of engineers carry out projects for the improvement of waterway systems when the total benefits of projects exceeded the project costs". Ogbonna and Sam-Otuonye (2023) gave credence to the above submission when they noted that "cost-benefit in project appraisals was born out of the problems and was mainly employed in the United States of America (USA) in multi-purpose water project. Recently, CBA is extensively employed by appraisers and planners to solve land-use planning problems". According to Opara (n.d) "cost-benefit analysis involves a comprehensive monetary evaluation of benefits and costs including those which are non-market or whose market price doesn't accurately reflect true economic value".

In the context of this study, CBA will help to;

i. identify the cost associated with implementing local content policies in Nigeria
ii. quantify the benefits of local content policies in Nigeria
iii. evaluate the effectiveness local content policies in achieving sustainable housing development goals.
iv. compare the costs and benefits of different local content strategies or scenarios
v. inform policy decisions and recommendations for improving local content policies.

2.3 Case Studies of Sustainable Housing Projects in Nigeria

The following are case studies of sustainable housing projects in Nigeria;

i. Compressed Stabilized Laterite Bricks (CSLBs). This project uses indigenous building materials to promote sustainable housing development. CSLBs are made from laterite soil, which is abundant in Nigeria, and can be used to construct buildings that are resistant to weathering, erosion, and insect damage (Alagbe, 2011).
ii. Earth Construction Techniques (ECT). This project aims to promote the use of earth as a building material in Nigeria. The ECT involves the use of earth to construct buildings

that are durable, sustainable, and environmentally friendly (Bobbo, Ali, Garba and Salisu, 2015).

iii. Sandbag Technology. This project uses sandbags as a building material to construct sustainable and affordable housing. The sandbags are made from natural materials and can be used to construct buildings that are resistant to natural disasters (Windapo, Adetooto, Pomponi and Emuze, 2022).

iv. Hydra form. This project uses a locally engineered technology to construct sustainable and affordable housing. The Hydra form technology uses a combination of soil and cement to construct buildings that are durable and environmentally friendly (Oyebisi, Ede, Afolayan and Oladeji, 2021).

v. Compressed Earth Brick (CEB)

This project promotes the use of compressed earth bricks as sustainable wall material in Nigeria. The CEB is made from a mixture of soil, sand, and cement, and can be used to construct buildings that are durable and environmentally friendly (Obaje, Ciroma, and Obaje, 2022; Iwuagwu and Iwuagwu, 2015).

3.0 Thematic Analysis

3.1 Cost Associated with Implementing Local Content Policies in Nigeria

Okwaraejesu (2024), attempted a comparative analysis of the cost of erecting a simple building of three rooms built with modern materials and another built with local materials (local content) and showed clearly that it is much cheaper to use local building materials to build than the modern (foreign) building materials.

In the same vein, it has been noted that "the implementation of local content policies in Nigeria has revamped indigenous participation in oil and gas to a remarkable degree. There remain, however, several difficulties. Adequate funding, effective expansion and linkage with other sectors are necessary for local content and aggregate economic development" (Nwaeze, 2022). The housing sector is among the other sectors referred to in this instance. Various costs can be incurred while local content is implemented as exemplified above. Among such costs are;

i. Training and capacity-building costs – upgrading local skills and expertise to meet industry standards. This is currently the case with the present day training programme

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of the Federal Government called Project T-Max; a technical and vocational education and training (TVET) framework/programme that aims to equip Nigerians with technical and vocational skills.

ii. Infrastructure development costs - building or upgrading facilities, equipment, and transportation networks. This is common with urban renewal programmes as have been witnessed in all the states of the federation in recent years.

iii. Technology acquisition costs – purchasing or licensing technology to enhance local production. States have also witnessed this kind of cost as they revolutionize their local economies.

iv. Certification and Compliance costs – ensuring local products meet international and national standards and regulations. This is done in Nigeria by Standard Organization of Nigeria (SON).

v. Supply chain development costs – establishing reliable local supply chains for materials and services.

vi. Marketing and promotion costs – promoting local products and services to attract customers.

vii. Regulatory and administrative costs – establishing and enforcing local content regulations.

viii. Research and development costs – developing new products and processes to meet local content requirements.

ix. Initial investment costs – starting or expanding local businesses to meet local content demands.

x. Potential opportunity costs – diverting resources from other economic activities to support local content initiatives.

3.2 Cost Effectiveness of incorporating Local Content in Sustainable Housing Development in Nigeria

In a study by Nnadi and Egeonu (2023), they averred that "there are abundant local building materials to reduce housing problems but they remain under-developed and hence socially unacceptable". They held that "…a shift to the usage of locally produced materials will result to possible reduction in building construction cost in Nigeria". As noted by Okwaraejesu (2024), "as

traditional (local) materials (which have been classified as green materials) are being used, we invariably are reducing the cost by more than half. In effect, the cost of housing will be stabilized…" In the views of Adeoye (2024) cited Ihechu (2024), "we must also embrace sustainable practice by promoting and adopting sustainable construction methods that utilize local resources efficiently and as such contribute to cost reduction and environmental benefits".

Incorporating local content in sustainable housing development in Nigeria has the capacity of reducing import cost, lowering transportation costs, increasing local economic activities, improved resource utilization, cultural relevance and acceptance, reduced maintenance costs, government incentives (like tax breaks or subsidies), skills development among several benefits.

3.3 Impact of Local Content on the Affordability and Accessibility of Sustainable Housing in Nigeria

Local content has both positive and negative impacts on the affordability and accessibility of sustainable housing in Nigeria. Among the positive impacts are;

i. reduced construction costs
ii. increased accessibility through the availability of sustainable housing options
iii. job creation by stimulating the local economies.
iv. cultural relevance made possible by local content creations.
v. improved maintenance using locally available materials and expertise.

The negative impacts include;

i. limited availability of the local materials
ii. higher upfront costs required for training and capacity building
iii. quality concerns as they may not meet international quality standards or benchmarks.
iv. dependence on local economies that are rarely reliable.

Iwuagwu and Iwuagwu (2015) put it succinctly thus,

> *"the use of local materials and building methods will cut costs to its barest minimum. The impact of green technology on the state of economy observed from the standpoints of cost saving/effectiveness is immense…Maintenance cost and general bills are minimized. Percentage of house ownership will increase…*

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> *Entrepreneurship and multiple employments will result as well as improvements of occupational and institutional productivity, while poverty alleviation is enhanced"*

They also averred that

"…would lead to an improvement in the overall quality of life…It is an added value for the cultural system as people become proud of their culture". It is their view that "locally produced building materials and intermediate technology…can reduce construction cost by about 60 percent as an affordable strategy for construction of low cost housing in Nigeria". Okwaraejesu (2024) concluded that "traditional building materials are good, safe, green, and above all very sustainable".

3.4 Economic Implications of Local Content in Sustainable Housing Development in Nigeria

According to Ajanlekoko (2001), "influencing the construction of housing for all income groups require creative framework through – localized design and packaging as opposed to imported design". He opined further that "the use of local building materials and intermediate technology must be followed with the provision of other basic infrastructure like safe drinking water, roads, electricity supply and other social amenities especially to improve the quality, livability and attractiveness of low cost housing".

The economic implications and benefits of local content in sustainable housing development in Nigeria are numerous, among them are;

i. Job creation. Local content policies can lead to the creation of jobs in the construction industry, stimulating economic growth.
ii. Economic diversification. By promoting local content, Nigeria can reduce its dependence on imported materials, fostering economic development.
iii. Cost savings. Using local materials can reduce construction costs, making housing more affordable.
iv. Increased local investment. Local content policies can attract local investors, boosting economic activity.
v. Improved balance of payments. By reducing imports, local content policies can improve Nigeria's balance of payments in international trade discussions.

vi. Stimulating local economies. Local content policies can stimulate local economies by promoting the use of local materials and services.

vii. Reducing poverty. By creating jobs and stimulating local economies, local content policies can help reduce poverty.

viii. Increased government revenue. Local content policies can generate revenue for government through taxes and levies.

ix. Improved housing affordability. Local content policies can make housing more affordable, thereby improving living standards.

x. Reducing environmental impact. Promoting local content can reduce the environmental impact of transportation and support sustainable development.

3.5 Strategies for Optimizing Local Content in Sustainable Housing Development in Nigeria

Given the importance of local content in the sustainable housing development mantra in Nigeria, it is pertinent to adopt strategies for optimizing local content in sustainable housing development. The strategies are discussed below.

Many authorities (Okwaraejesu, 2024; Iwuagwu et al, 2015; Oyebisi et al, 2021) have advocated the use of local building materials for building in Nigeria. By promoting the use of local building materials like clay, sand and wood, the costs incurred in patronizing foreign materials is cut down. Another strategy is to develop local supply chains. This will enable the establishment of a good relationship with local suppliers and manufacturers, so as to ease sourcing of local materials and products. A third strategy is to train the artisans and contractors. Capacity building programs are essential in enhancing the skills of artisans for sustainable practices.

Fourthly, it is equally good to incorporate traditional Nigerian building techniques and designs that are adapted to the local climate and culture (Okwaraejesu, 2024). Fifthly, a thorough implementation of local content policies that specify minimum benchmarks/standards for local content inclusion in sustainable housing development projects will suffice.

Again, ensure the use of local labour in the local building industry. This will not only stimulate the local economies but also reduce costs. It is also a good thing to develop local sustainable building standards and codes that incorporate local conditions and sustainable practices. Adeyemi

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(2018), Ezigbo (2020) and National Building Code of Nigeria (2016) etc espoused the merits of optimization of local content in the Nigerian housing sector.

4.0 CONCLUSION AND RECOMMENDATIONS

4.1 Conclusion

This study evaluated the economic implications of local content in Nigeria's sustainable housing development mantra and considered the cost-benefit of adopting such a policy. It also identified many economic benefits for adopting the local content policy in Nigeria to include; job creation, economic diversification, cost savings, increased local investment, improved balance of payments, stimulating local economies, reducing poverty, increased government revenue, improved housing affordability and reducing environmental impact. It listed the costs associated with implementing local content policies in Nigeria. These costs include; training and capacity building costs, infrastructure development cost, technology acquisition cost, certification and compliance costs, supply chain development cost among others.

The paper submits that local content impacts on the affordability and accessibility of sustainable housing in Nigeria through reduction of construction costs, increased accessibility through the availability of sustainable housing options, creating jobs by stimulating the economies among others. The paper identified strategies for optimizing local content in sustainable housing development in Nigeria, one of which is promoting the use of local building materials for building in Nigeria thereby tapping into the local content and sustainable development theories.

4.2 Recommendations

i. There should be a deliberate effort by government to put up a very transparent and people-oriented/minded administration. Good governance makes leaders think outside the box to attract affordable and accessible housing development that is sustainable.

ii. A workable public-private-partnership (PPP) scheme in housing development is instructive o ensure sustainability in housing development using local methods, materials, machines, money and manpower. The focus of such PPP should be in the area of local content implementation in housing development.

iii. Training and re-training of core workers and experts in local building material use should be prioritized and encouraged.

iv. There is need to build on the findings of the National Research Institutes especially those that have to do with local content itemization for housing. Also, many scholars like Okwaraejesu (2024), Alagbe (2011), Obaje et al, (2022) and Iwuagwu et al, (2015) have done extensive works on this subject matter and so should be widely consulted for implementation.

v. There should be incentives given to home-based local building material manufacturers in terms of subsidies, tax holidays etc.

vi. There should be increased education/sensitization and advocacy on the use of local building materials and indeed local content in building. Concerted efforts to boost the use of local building materials and implement local content policies in the building sector of the country should be energized.

REFERENCES

Adeyemi, O.A. (2018). *The impact of local content on economic growth in Nigeria*. Retrieved online on the 12/08/2024.

Ajanlekoko, J.S. (2001). "Sustainable housing development in Nigeria: The financial and infrastructural implication". International Conference on Spatial Information for Sustainable Development, Nairobi, Kenya, 2-5 October, 2001.

Alagbe, O.A. (2011). Enhancing sustainable housing development in Nigeria using compressed stabilized laterite brinks. *Journal of Sustainable Development and Environmental Protection,1*(3).

Bobbo, H., Ali, A.M., Garba, I. & Salisu, M. (2015). The prospects and challenges of earth construction techniques (ECT) in the Nigerian Educational Curriculum. *International Journal of Engineering Science, 2*(8), 2233-2237.

Chang, R., Zuo, J., Zhao, Z. & Zillante, G. (2017). Evolving theories of sustainability and firms: History, future directions and implications for renewable energy research. *Renewable and Sustainable Energy Reviews, 72*:48-56. DOI.1016/j.rser.2017.01.029. Retrieved 20/07/2024 from: https://www.researchgate.net

Ezigbo, C. (2020). *The role of local in sustainable infrastructure development in Nigeria*. Retrieved 12/08/2024 online.

IGI Global (2024). *What is local content?* Retrieved 20/07/2024 from: https://www.igi-global.com>local

Ihechu, V. (2024, March14). Builders proffer solutions to increasing cost of building materials. *News Agency of Nigeria (NAN).* Retrieved 4/08/2024 from: https://nannews.ng

https://doi.org/10.5281/zenodo.14644360

Iwuagwu, B.U. & Iwuagwu, M.B.C. (2015). Local building materials: Affordable strategy for housing the poor in Nigeria. *Procedia Engineering, 118*:42-49. DOI:10.1016/j.proeng.2015.08.402.

Kazzazi, A. & Nouri, B. (2012). A conceptual model for local content development in petroleum industry. *Management Science Letters, 2*(6), 2165-2174. DOI:10.5267/j.msi.2012.05.031

National Building Code of Nigeria (2006). *Laws and regulations on building in Nigeria.* Abuja: Federal Republic of Nigeria.

NBS (2022). *Sustainable housing*. Retrieved 22/08/2024 from: https://www.thenbs.com

Nnadi, E.E. & Egeonu, J.C. (2023). Dynamic cost consideration of local materials for mass housing construction in Nigeria. *Newpoint International Journal of Engineering and Physical Sciences (NIJEP), 3*(3), 16-27. Available at https://doi.org/10.59298/NIJEP/2023/10.3.1100.

NRGI Reader (2015). *Local content: strengthening the local economy and workforce.* Retrieved 20/07/2024 from: https//resourcegovernance.org

Nwaeze, G. (2022). *Ten years of local content implementation in Nigeria: Successes, challenges and the imperative of expanding beyond oil and gas*. Retrieved 3/08/2024 from: https://papers.ssm.com

Obaje, J.A., Ciroma, F.B. & Obaje, S.A. (2022). Suitability analysis of compressed earth bricks (CEB) for sustainable housing delivery in Guinea Savannah Zone of Northern Nigeria. *Environmental Technology and Science Journal, 13*(1), 73-84. DOI:10.4314/etsi.v13i1.6

Ogumba, O. A. & Ajayi, C.A. (2018). *Property feasibility and viability studies.* Ile-Ife: Obafemi Awolowo University Press.

Okwaraejesu, A.O. (2024). "The imperative of using traditional building materials as a paradigm shift in construction of buildings: Response to high cost of building materials". 6th September Lecture Series, School of Environmental Design and Technology, Federal Polytechnic Nekede, held 3rd July, 2024.

Omaka, C.A. (2012). *Municipal and international environmental law.* Lagos: Lions Unique Concept.

Oyebisi,S.O. Ede, A., Afolayan, O.D. & Oladeji, S. (2021). *Assessing the low-cost buildings in Nigeria using hydraform blocks as walling materials: The journey so far*. DOI.1088/1757-899X/1036/1/012044.

The Sweaty Penguin (2022). *What is sustainable housing and how do we achieve it?* Retrieved 22/08/2024 from: https://www.pbs.org/wnet/peril-out-pro

United Nations (2023). *The sustainable development agenda.* Retrieved 20/07/2024 from: https://www.un.org

Windapo, A.O., Adetooto, J., Pomponi, F. & Emuze, F. (2022). *Sand building technology*. South Africa: Construction Business and Management Research Group, Department of Construction Economics and Management.

https://doi.org/10.5281/zenodo.14644360