

DEVELOPING POLICIES AND PROGRAMMES FOR GREEN BUILDINGS: WHAT CAN NIGERIA LEARN FROM MALAYSIA'S EXPERIENCE?

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Abstract

Nigerian government has begun to develop plans that will address green buildings and environmental sustainability, a matter and issue on which Malaysia has wide-ranging experiences. Through a comparative study on green building policies in Malaysia and Nigeria, the study identified important lessons relevant to Nigeria green building policies and programmes and creates a general explanation of Malaysia green building policies that could be applicable to Nigeria. The study revealed that Malaysia has more elaborate green building policies, and implementation programmes that could have practical utility for green building developers and investors than Nigeria. The study concluded that Nigeria can in addition to adopting stronger research agenda for green building policy issues, and regulations, she could as well learn from the provisions of Malaysian GBI policy by adopting some GBI policies, programmes and incentives especially in the area of green technology that is effective to sensitize green building in Nigeria.

Keywords: *Green building, Policies and programs, Green building index, Nigerian green building council*

1.0 INTRODUCTION

One of the countries that have initiated and implemented green building policies and programmes is Malaysia. Malaysia's green development policies could be traced to 3rd Malaysian Plan 1976-1980 when the relationship between environment and development started receiving consideration in development planning (Hezri and Hasan, 2006). However, green building policies in Malaysia effectively commenced in 2009 with the launching of the National Green Technology Policy (NGTP) and the subsequent introduction of the Green Building Index (GBI) (Suhaida *et al.*, 2013). Nigeria, in contrast is at the moment drawing and developing its policy system for green buildings. During the last few years, the Nigerian government and professionals in the built

environment have begun the development of policies for green buildings. As a first step, Nigeria in 2014 registered the Green Building Council of Nigeria (GBCN) with the World Green Building Council (WGBC) on a probationary membership level (WSP, 2014). Studies have revealed that countries and states that adopt green building policies for their buildings have greater prospects of delivering high-performance green building that reduces environmental footprint, energy use, and operational cost, enhance employee productivity, and promote collaborative and innovative workplace (Darren and Tetsuo, 2014; Onuoha *et al.*, 2016).

Such countries experience situations where developers and clients voluntarily pursue certification for their real estate projects (Darren and Tetsuo, 2014). On a broader sense, the

pressure for effective green building policy is anchored on rising evidence that the building sector is a major consumer of resources and energy around the globe. For instance, the building sector accounts for about 44% of the society's total material use and a large proportion of more than 50% of primary resources (Nelms, *et al.*, 2005). In Canada, UK and US for examples, energy consumption by buildings is about 30% -50% of the country's total energy demand (Nelms *et al.*, 2005). In Malaysia and Nigeria, studies indicate that more than 50% of energy is used in buildings for occupant's comfort (Hassan *et al.*, 2014; Energy Commission of Nigeria, 2014). Adequate and effective policies are needed to regulate and cut energy consumption by buildings across countries. In determination to reduce the rise in energy use and pursue green economy, Malaysia and Nigeria have developed policies and programmes that specifically target green building. However, these policies have not yielded significant result. For example, in country by country performance based on LEED achievement of countries in green economy, it was found that Malaysia has a total number of 5,785, 244 gross square meters of certified and registered green building projects while Nigeria has 317, 039 gross square meters (United States Green Building Council 2015).

Though, Malaysia figure will rise if certifications based on Malaysia GBI are added. As of 2013, Malaysia has certified more than 137 green buildings representing over 60 million square feet (Aliagha *et al.*, 2013). Thus, it could be said that both countries are at different levels of green building policies, development and implementation of which Malaysia is at the upper level. So, this study is predicated on the basis that there is likely to be potential benefits and lessons relevant to Nigeria green building policies and programmes from Malaysia's experience if a general explanation of Malaysia and Nigeria green building policies are examined. Therefore, this study focused on the specific historical policy developments and contemporary state of green building policies in Malaysia and Nigeria with substantial emphasis on the evolving idea of green buildings, research and education, policy development and method of building assessment.

2.0 THE STUDY AREAS – WHY MALAYSIA AND NIGERIA?

Malaysia and Nigeria are in the same tropical zone. Both countries are in the same latitude characterized by hot and humid climate. Thus, regions such as Malaysia and Nigeria will be adopting policies and programmes suitable for green building materials that would help in reducing high temperature. On this bases, they share certain similarities in environmental features which could have clear implications for green building. Again, Malaysia and Nigeria are capitalist countries and erstwhile British colonies. They also operate a mixed economy giving government participation in the economy. Both countries operate a free market where property delivery system is private sector driven. As Bawa (2013) put it, Malaysia and Nigeria have adopted comparative components of private sector dominated housing delivery systems. Again, both countries are ranked among twenty major emerging economics. The two countries also practice green building and sustainability (Alabi, 2012).

3.0 COMPARATIVE RESEARCH AND POLICY IN GREEN BUILDING

One of the reasons for comparative study in green building is to understand, explain, assess or change green building phenomena which take place in different contexts, scales and regions (Lawson *et al.*, 2009). Comparative study promotes exchange of information, knowledge sharing, catalysed policy development and theoretical debate across states and regions (Lawson *et al.*, 2009). Endan (1984) defined the concept of comparative study on policy analysis as: *"...Studies typically involve cross-national assessment of similar systems to determine whether the effects on policy are culturally specific or the result of the policy making system. The focus of these studies is systematic evaluation of the contextual and experiential knowledge gained from a given policy so that generalization made can be tested.* On the other hand, Wolman (1992) and Allen (2003) had argued that to realise what Pugh (1995) called "structural change" policies and bases for solving housing and

building problems can be adopted for use in another culture. This is in realisation of what Rose (1991) described as “lesson drawing”, what Wolman (1992) called “policy transfer” and what Allen (2003) termed “learning exercise”. Also, this approach is suited in what Allen (2003) observed that: “*Researching the broader political and cultural context within which housing...policies exist should not, be seen as an irrelevant self-indulgence. Rather, it should be seen as an effort of lesson, learning, and exercise.*”

4.0 MALAYSIA GREEN BUILDING TREND AND POLICIES

4.1 National Green Technology Policy (NGTP)

The launch of NGTP in 2009 is a display of government commitment in initiating programmes aimed at achieving green economy in Malaysia. One of the objectives of NGTP programme was to strengthen the campaign and promotion of the use of energy-efficient materials such as solar Photovoltaic (PV), rainwater harvesting in buildings and the adoption of GBI (Suhaida *et al.*, 2013). The National Green Technology symbolises an economic, environmental and social mechanisms of providing direction and motivation for Malaysians to always enjoy good quality living and a healthy environment while making significant progress in the areas of energy, building, water and waste management sector as well as transportation sectors (Rostami *et al.*, 2015). Through this policy Malaysia is expected to reduce up to 40% emission intensity of GDP by 2020 (Gee, 2015). As at the moment, the implementation progress of NGTP in Malaysia has been steady despite existing challenges. For example, the policy implementation progress of NGTP in Malaysia have been significant in four key areas: 1) energy sector, 2) building sector, 3) water and waste management sector and 4) transportation sector. In the energy supply sector for instance, NGTP has improved on power generation including co-generation by industrial and commercial sectors while in the building

sector, adoption of green technology in the construction, management, maintenance and demolition of buildings in Malaysia has been central (Mansur, 2013). However, earlier to the launch of NGTP, Malaysia has in 1994 established the Construction Industry Development Board CIDB and the Construction Industry Master Plan CIMP to chart a sustainable path for the construction industry in Malaysia.

4.2 Green Building Index (GBI)

One of the major objectives of developing GBI rating tool is for the evaluation and certification of environmental design, construction and performance of buildings in Malaysia. Apart from the certification of green buildings, Isa *et al.*, (2013) observed that the ideologies behind developing GBI rating tool was to encourage energy saving and resources, recycle materials and adapt buildings to the Malaysian climate. GBI has recorded significant increase in the number of certifications. For example, in 2013, over 137 buildings were certified representing 30% of the total application submitted within that year. This represents over 60 million sq. ft. of green buildings and on average, it translates to a total of 224,435 tonnes of CO₂ emission reduction (Aliagha *et al.*, 2013). At present, Gee (2015) put the total number of certified green buildings in Malaysia at 344 (152 million sqft). Again, on LEED achievement, Malaysia has certified over 5,785,244 sqm (United States Green Building Council, 2015). Through GBI policy framework, Malaysia has turned four of her iconic buildings -the Kuala Lumpur Securities Commission building, the Diamond Building Putrajaya, Green Technology and Water Building. (LOE Energy Office Building GreenTech Malaysia) into green buildings (Aliagha *et al.*, 2013). Also, series of green tax incentives and policies to promote green building among public and private sectors in Malaysia have been introduced. The GBI is based on criteria which include: Energy and water efficiency; Indoor environmental quality; Usage of recyclable and environment friendly material; and adoption of new technology (Gee, 2015).

Table 1: National Initiatives in Greening the Building Sector in Malaysia

S/N	Green Building Tools/ Guides	Description	Achievement
1	Low Carbon Cities Framework and Assessment System (LCCF)	<p>Launched in 2011 by Ministry of Energy, Green Technology and Water Malaysia</p> <p>LCCF objectives: (a) To encourage & promote the concept of low carbon cities and townships in Malaysia. (b) To increase the compatibility of cities / townships with their local natural system. (c) To guide cities in making choice decisions towards greener solutions.</p>	<p>Achievements (till November 2015)</p> <p>-CO2 baseline calculated for eight sites</p> <p>-Project Briefs completed for six sites.</p>
2	Malaysian Carbon reduction and Sustainability Tool (MyCREST)	<p>Currently being developed to be proposed as the National Green Rating Tool;</p> <ul style="list-style-type: none"> • Tool for sustainable building rating system which aims at quantifying, reducing built environment's impact in terms of carbon emissions and environmental implication; • Integrating socio-economic considerations relating to the built environment and urban development. • Takes into account a more holistic lifestyle view of the built environment; and design, construction, operation and maintenance. 	

Table 2: National Initiative in Encouraging Energy Efficiency (EE) in Malaysia through Green Building

Year	Initiatives and Policies
1996-2000	Energy Efficiency Promotion in the 7 th Malaysian Plan
1999	Malaysian Industrial Efficiency Improvement Programme (MIEEP)
2001	<ul style="list-style-type: none"> • Fiscal incentives for energy efficiency • Development of Malaysian standards MS1525
2002	<ul style="list-style-type: none"> • Capacity Building of energy Commission and related key institutions on energy efficiency and demand side management • Energy audit on government buildings • Energy Efficiency (EE) and Renewable Energy (RE) in education Curriculum and University courses • Other forms of continuing training in energy efficiency, • Building codes and energy certification • Training offered by professional associations • Continuing professional development • Professional CPD requirements • In-company training • Certification institutions • Adaptation of technical and vocational education and training (TVET) courses/new TVET courses
2006	Development of EE guidelines for Malaysian Industries
2008	Efficient Management of electrical energy regulations
2009	Green Building Index (GBI)
2013	Minimum Energy Performance Standards (MEPS)
	Achievement from the EE Initiative in Malaysia

	<ul style="list-style-type: none"> • Estimated annual cost savings from energy efficiency appliances sold under SAVE Rebates is RM34.4 million and reduction of 158.1 GWh of electricity. • Electricity usage in government buildings reduced at 6.1% in 2014 compared to 2013, and 13.6% in 2012 compared to 2011. • Contribution of EE sub-sector to GDP in 2013 was RM1.5 billion • EE products contributed RM6.6million revenue to green business in 2012/2013 • 17% energy savings after retrofitting with a return on investment of less than six years at Ministry of Finance, Malaysia
	<p>Fiscal Incentives towards Low Carbon Community • Green Technology Financing Scheme (GTFS)</p> <ul style="list-style-type: none"> • Total loan amount of RM3.5 billion for producers (max RM50 million) and users of green technology (max RM10 million) with 2% interest subsidy by the government & 60% government guarantee. • RM2.37 billion has been disbursed till October 20 • Projection of CO2 emission reduction by GTFS projects: 2.67 MtCO2e/yr • No. of green jobs created from GTFS projects: 3,018 jobs

5.0 NIGERIA GREEN BUILDING TREND AND POLICIES

5.1 Green Building Council of Nigeria (GBCN)

GBCN was registered in 2014 with the World Green Building Council (WGBC) on a prospective membership level (WSP, 2014). GBCN has the responsibility of developing a rating system for sustainable assessment of buildings in Nigeria. GBCN is presently in the process of developing its policy system for green buildings. However, at the moment, the Green Building Council of South Africa (GBCSA) rating tool - the Green Star is being used to certify green buildings in Nigeria. The certification is called "Green Star SA-Nigeria". It is not clear whether Nigeria has the intention of adopting further policies to promote green building due to some observable deficiencies in Green Star SA – Nigeria such as in the area of weighting standards specifically on energy efficiency, management and innovations. The Green Star SA rating tool (Green Star SA-Nigeria) is based on nine major categories namely management, indoor environmental quality, energy, transport, water, materials, land use and ecology, emissions and innovations. Though, Nigeria has not made significant policy on environmental rating scheme, it has however registered about 317,039 gross sq. of green buildings ((United States Green Building Council, 2015). Besides, it has

introduced various incentives and agencies to encourage sustainability. They include: National policy on the environment NPE, Environmental Protection Agency Act 1988 and the National Environmental Standards and Regulations Enforcement Agency NESREA.

Table 3: National Instruments and Programmes for Sustainable development in Nigeria

Policies and Programmes	Status
Sustainable Development or Environmental education incorporated into school curricula	yes
Sustainable Development Indicators Program	In progress
Eco - label Regulations	In progress
Recycle/Reuse Programs	yes
Green Accounting Program	yes
Access to World Wide Web	yes
A national World Wide Web Site for Sustainable Development or State of the Environment	In progress

Source: Federal Government of Nigeria (1997)

6.0 METHODOLOGY

This study adopted comparative method of analysis. Comparative method of analysis examines pattern of similarities and differences across a moderate number of cases. Like qualitative analysis, comparative studies consider

how the different parts of each case are relevant to the investigation or fit together in order to draw lessons, importance and shortcomings so as to make conclusion (Mills et al., 2006). There are rising body of cross-national and regional comparative studies, including the cross-regional similarities and differences in investigations between Malaysia and Nigeria on sustainability in building construction, housing, real estate investment performance and real estate practice (Alabi, 2012; Bawa, 2013; Olusegun et al., 2015). Thus, this study examined the differences between Malaysia and Nigeria on green building policies and programmes in order to understand the specificities and show the unique aspects of Malaysian policies and programmes that would be relevant to Nigerian policy.

7.0 FINDINGS AND DISCUSSIONS

7.1 Emergence of green building

The study found that development of green building policies in Malaysia and Nigeria is founded on history of policies and programmes. Though, both countries are highly dependent on historical policy changes, however Malaysia's green building policies have been built over years than Nigeria. Malaysia began to encourage green building several years before Nigeria as revealed by the literature. Besides, green building policies in Malaysia has central government influence but more decentralized as each state has a role to play in green building development. On the part of Nigeria, interest in green buildings started of recent times and the country today does not have same long strong policy of action like Malaysia. Thus, the emergence of green buildings in Nigeria is much later. The implication is that there is less growing number of green buildings in Nigeria today relative to Malaysia. Although, political authorities in Nigeria have adopted the South Africa Green Star rating tool but such has not improved green building. As at the moment, Nigerian green building policy systems are built more on national influence from the federal government with less participation from the states. Therefore, Nigeria should learn from the progression of green building policies in

Malaysia which is built upon history of policy and cultural shifts. Thus, green building issues in Nigeria, like many other policy matters, have to be built upon a path-dependent history of changes both in public attitudes and policy formulation.

7.2 Necessity for strong research programmes and education

The need for strong research and education policies for green buildings in both countries was identified as a challenge. Though, there could be cross-national differences in emphasis, available literature suggests that Malaysia has shown more commitment in educating developers and city inhabitants about green buildings than Nigeria. For example, while Malaysia scholarships and grant to institutions focuses on research and education to promote innovation of green buildings and green building policies, Nigeria is yet to fully integrate the education and researches on green building into her educational curriculums. Again, whereas some of the research on green buildings in Malaysia has taken place through demonstration projects designed to showcase new advances in building technologies, Nigeria has shown less interest in green technology and innovations. As a result, there has been an implementation deficit in Nigeria. From the forgoing, it is obvious there are clear difference in green building education and research between Malaysia and Nigeria. Whereas Malaysia has more elaborate educational and research programmes targeted towards green building, Nigeria is yet to fully initiate and implement green building education and researches in her educational system.

The implication is that education and researches on green building is less in Nigeria compared with Malaysia. For example, there are growing number of researches and literature in Malaysia more than in Nigeria that focus on educating stakeholders about green buildings. Nigerian literature are presently focusing more on awareness and new knowledge of green building. Unlike Malaysia, the Nigerian government and experts in the building industry have not given much attention to research and education, as such there has been the problem of awareness. Thus, Nigeria can learn from Malaysia experience by

consistently creating faculties for green building education, encouraging students to conduct green building research and demonstrations and thereby gain necessary expertise. As political authorities have done in Malaysia, Nigeria should develop research infrastructure and educational facilities such as labs and full-scale labs for hands-on experimental research, to conduct demonstration projects and develop and test innovative materials and technologies, grow national laboratory capacity to support research initiatives, review progress and report on results. Furthermore, funds for national and regional demonstration projects (per climate zones) to catalyse green building markets, such as for renewable technologies, low-impact development and innovative passive and active building systems are critical to green building growth in Nigeria.

7.3 Policy/programme development and effectiveness

A key factor that is significant in Malaysia green building initiatives but is lacking in Nigeria as at the moment is policy development and expansion. Nigeria policy development initiatives is still at infant stage and more evolving compared with Malaysia. Elaborate green building policies have been made in Malaysia ranging from GBI policy provisions to green tax incentives relative to Nigeria. Nigeria uses the South Africa Green Star rating tool, this has however not significantly spurred green building investment in Nigeria. For example, the Green Star tool contain and awards lower green building points in the areas of energy efficiency, management and innovation policies compared to Malaysian GBI. The use of Green Star in Nigeria rating should be considered as temporary as its continued use does not demonstrate serious commitment to green building. Again, due to more enabling green building policies in Malaysia, greater number of industry professionals have more green building skills than their counterparts in Nigeria. While few literature on green building are narrow focused with less emphasis on the developing green building policies and skills in Nigeria, a little number of private construction companies and architects have less sustainable construction skills. Thus, this study sees this inadequacy in

green building industry as a barrier to the development and implementation of sustainable building policies and programmes in Nigeria. Thus, Nigeria can learn from Malaysia where green buildings policies were developed by a network of professionals already active in the field of green building, a situation that has contributed to learning and innovation over time. This will help establish cordial relationship among industry professionals as discussions on policy initiation and implementation would be easier when the parties already know themselves.

7.4 System and standard for green building assessment and certification

Although literatures in Nigeria and Malaysia advocate on improved systems and standard of green building assessment and certification, there has been a greater focus of this in Malaysia than Nigeria over a decade. For example, there are evidences that Malaysia has improved from assessment to implementation compared with Nigeria. Perhaps, this is because Malaysia has pursued more elaborate green building policies such as developing her own Green Building Index (GBI) rating tool which has become a sustainable building standard in Malaysia. Thus, there is less emphasis on developing a tool and methods of green building assessment but rather on implementation. While Nigeria in contrast is in the process of developing her own rating tool. So, much of Nigeria's attention as at the moment is greatly focused on developing assessment systems rather than implementation. Though, Nigeria uses the South Africa Green Star rating criteria at the moment, the Green Star point values to key sustainable issues in green building is low relative to GBI measures and benchmarks. For example, in energy efficiency, management and innovations Malaysia maximum point values for new construction building stand at 35%, 16% and 7%, respectively (Green Building Index, 2009). While the available weighing points of Green Star on the three categories are 30%, 14% and 5%, respectively (Goosen, 2009). Nevertheless, the overall scoring values of Malaysia GBI is less compared to other countries such as Singapore and Indonesia. All the same, since Malaysia has greater experience in green

building relative to Nigeria, Nigeria can in addition to the adoption of Green Star rating tool analyse the technical details of the various building assessment systems in Malaysia (e.g. green building index) such as her approach to various environmental issues and spatial scales, her underlying values, and how Malaysia determines criteria and points. This will help Nigeria professionals examine certain key issues of sustainability and reduce the difficulties in achieving the required quantification. For example, green building is in embryonic stage in Nigeria. As such, it could create the problem of quantifying the benefits inherent in walkable neighbourhoods, diverse communities, and tree-lined and shaded streets. All of these are sources of credits in green building index for new developments which could be exploited by Nigerian industry professionals.

8.0 CONCLUSION

Regardless of the many differences in policy, social and economic backgrounds between Malaysia and Nigeria, this study demonstrated some similarities in green building policy research. For example, irrespective of the point values, the Malaysian GBI and Green Star SA-Nigeria policy rating tools covered the key sustainability criteria and measurement items (e.g. Energy efficiency, indoor environmental quality, sustainable site planning and management, material and resources, water efficiency and innovation. However, owing to long history of green building activities in Malaysia, many differences exist from which Nigeria can draw important lessons.

First, Malaysian experience has shown that conscious efforts should be made by the Nigeria to increase sensitization of green building features among developers and investors and the public on the benefits of sustainable construction practice. For example, constructing or retrofitting a building to green building requires policy awareness of materials and innovation in building technology and design before new products and techniques go into the market. Second, the Nigerian government can show leadership in green building by adopting some GBI research

agenda for green building policy issues, and regulations. Also, some GBI policies and incentives especially in the area of green technology that are strong enough to sensitize green building could be similarly adopted. Furthermore, Malaysia experience suggests that Nigeria needs to develop her own rating tools as the use of South Africa Green Star in the interim may not sufficiently improve green building. On the other hand, through green technology transfer or green FDI (foreign direct investment), integrated work across geographical distances and easier information exchange could be encouraged between the two countries. For instance, environmentally friendly industries technology and practices that directly contribute to environmental progress can be transferred while more innovative means to design and construct green buildings, as well as the skills to do so, can be shared across country borders.

Apart from the foregoing, the leadership and emphasis given to issues of green building and sustainability in Malaysia at the government level is something that Nigerian authorities can learn from Malaysia. Notwithstanding the differences that could exist in political context, government intervention at the federal level in Nigeria is useful. For instance, a federal legislative policy on green building such as grants, loans, rebates and tax incentive could improve states and local government acceptance of green building in Nigeria. Again, from Malaysia experience, the government of Nigeria could help states and local authorities in Nigeria that are stressed already, to determine the best ways to develop environmental friendly buildings while research and education programmes could help encourage innovation.

Similar to other studies, a major limitation of this study is lack of discussion on the effect of green building policy in relation to costs of investment in green building. One of the barriers to green building policy initiation and implementation in Malaysia and Nigeria include fears about cost. The span for recovering the cost of investment in green buildings in Malaysia and Nigeria is prohibitively long and the investment is usually shouldered by developers who often do not enjoy the cost savings while sustainable products are assessed largely based on cost

implications. This study is of the opinion that further studies on issues of cost in relation to green building policy in both countries should be conducted. This will help the government and policy makers in Malaysia and Nigeria effectively address practical issues arising from green building development and investment. Though, Malaysia wide-ranging experience in initiating green building policies has a longer history of interest, it also suggests that the country has passed through the hard process of trial-and error, lesson learning and knowledge sharing from other developed countries. This is essential for any evolving policy system such as Nigeria. By looking to the continent of Asia that share similar tropical features with her, Nigeria policy-makers could articulate and formulate less difficult and innovative green building policy systems and avoid some of the difficulties and technicalities associated with the developed countries that do not share similar environmental features with her. Having said that, though Malaysia is performing better than Nigeria and has a lot Nigeria can learn from, it is pertinent that Nigeria look beyond Malaysia for green building policies and programmes. Drawing experience from best performing countries and cities in green building such as UK and Singapore will be imperative.

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