THE REBIRTH OF TRADITIONAL ARCHITECTURE IN NIGERIA

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Abstract:

This work studied the Re-birth of Traditional Architecture in Nigeria, the coming back of traditional building materials, the use of clay/laterite soil (in mud building), plant leaves and recycled products, used hundreds of years ago, resurfacing because of poverty and bad government housing policies. The aim is to identify, how bad government housing policies have jeopardized housing delivery systems in the country and affecting poor citizens especially, those migrating from rural to urban areas in search of greener pastures, who live in quick-fix homes built with local and natural materials because they could not afford high and expensive renting prices within the city proper. The rush to urban areas resulted in urbanism and urbanization, which is a natural phenomenon. To achieve this, 255 questionnaires were designed and randomly given out to the poor people in Abuja, Enugu and Lagos, to generate data used. It adopted quantitative research methods that embraced, survey, archival and observational methods. The result showed that poverty and bad government policies have given impetus, to the rebirth of our traditional building materials although, strengthened by modern day technology. The findings were emphasized to justify the need for a changed government housing policies in the country and to start addressing the housing needs of the poor citizens, promote the use of clay soil/laterite products in a more scientific ways and discourage quick-fix housing provisions as practiced in the urban poor communities. The study, therefore recommends that the players in the built environment should work together for the interest of the deprived urban poor in search of a better living.

Key words: *bricks, clay soil, cement, urbanism, urbanization, hydraform block, poverty, housing*

Introduction

In Shibam, Yeman, the tower blocks were the tallest mud brick buildings in the 16th century. Shibam has more mud brick high-rise buildings and the tallest mud buildings than anywhere in the world. Some of the buildings are 30 meters (100 feet) high and regarded as oldest and best examples of urban planning based on the principles of “vertical construction or Manhattan of the desert” (Tower Block, 2013). According to Types of Houses in Nigeria (2014), back in 1940 Nigerians lived in mud houses with thatched roof especially those from the north and the south central.

Housing types vary by geographic location. In the coastal areas the walls and roofs are made from the raffia palm, which abounds in the region. Rectangular mud houses with mat roofs are found in the forest belt, although the houses of the more prosperous have corrugated iron roofs. In the savanna areas of the central region and in parts of the north, houses are round mud buildings roofed with sloping grass thatch, but flat mud roofs appear in the drier areas of the extreme north (Mud Houses, 2014). The Igbos occupying the eastern part of the country also live in their mud beaten houses. Then, it only takes four to eight able-bodied men to dig up the mud and mould it into different huts for the man of the house and his often numerous wives (Types of Housing in Nigeria, 2014). Figure 1 is a typical example of the 1940's mud houses still existing in Igbo land although, the building has gone through renovations since built.

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Figure 1. Adazi-Nnukwu, Anocha Local Government Area mud building still existing.

Source: The author's field work

In some areas, they covered wood framed structures with mud while same was not the case in certain areas. The mud structures are commonly known as “Uno Atani” in Igbo land (spare grass house and raffia palm fronds). The mud buildings are covered and roofed with all kinds of plant leaves, depending on the area, but mostly used are, raffia palm fronds, Ata (spare grass, sharp mouthed and aggressive grass, carefully weaved together). At that time, most of the huts (mud buildings) in developing countries were built with mostly clay/laterite soil mixed with water, hand compressed and straight from the ground around the area of the building to the building and roof, covered with native or local materials including plant leaves and grasses.

With the improvement and growth in the economy of the Nigeria, came the introduction of cement. According to the Nigeria's Cement Manufacturing Industry Repetitive, the history of cement production in Nigeria dates back to 1957 (Retrieved from:http://www.proshareng.com/articles/1560). With the introduction of cement, Nigerians gradually moved away from mud buildings and used mostly concrete blocks made with cement and sand (sandy soil). According to Types of Houses in Nigeria, the mud houses were transformed into beautiful edifices, people began building it with plan, with different rooms and even a sitting room, painting it and even bringing in electricity. Some of the mud buildings were plastered and covered with cement. Even with the introduction of cement and blocks, mud was still used in the form of bricks. As indicated by the Types of Houses in Nigeria, the brick houses have taken the center stage in Nigeria now as the mud and thatched houses are referred to as ancient or primitive houses.

Bricks are compressed clay soil specially made in form of small blocks. According to Neufeldt and Guralnik (1994), brick is a piece of baked clay. A substance made from clay molded into oblong block and fired in a kiln or baked in the sun, used in building and paving. Most times, the compressed clay is burnt in special ovens depending on the area, availability of the facility and or, dried under the sun before usage. These bricks are still used in the western world, especially in building expensive homes. In Maryland, USA, the Maryland Masonry Institute, now, the Mid-Atlantic Masonry Association (MAMA) did a lot of work with bricks and constantly promoting their products and marketing innovative works done with bricks. The Mid-Atlantic Masonry Association

(MAMA) was formed in 2013 to disseminate information and promote the use of masonry in all aspects in the market area. The program of work creates a targeted approach to providing information and strategies to promote masonry as the premier building system. Committees address topics as: promotion of masonry products and services within the geographic areas. Networking events where members can share best practices and camaraderie (Mid-Atlantic Masonry Association).

A Brief History

Pre-independence societies in Africa countries have been predominantly rural for the most part of their history. Changes became apparent after most Africa countries gained independence from their colonial masters in the mid-20th century. The emerging independent countries experienced a rapid and profound reorientation of their social and economic lives that caused attraction towards cities leading to urbanism. Urbanization was first noticeable in the state capitals and later in various expanding cities. Even as greater numbers of people moved to a small number of rapidly expanding cities, or as was often the case, a single main city (the state capital), the fabric of life in both urban and rural areas changed in massive, often unforeseen ways. Nigeria has experienced a phenomenal growth in population and urbanization, but its experience has also been unique in scale, in pervasiveness, and in historical antecedents (Alagbe and Adeboye, 2005)

The growth of most countries urban areas was as a result of the influx of people and that resulted in urbanization. In a contemporary situation, urbanization is an unstoppable phenomenon. Okonkwo (2013) states that, urbanization is not a recent phenomenon in the history of Nigeria. Also, city growths date back into the country's pre-colonial era. Both urbanization and city growth have in the course of time been in relation to the level of the country's socio-economic development. Pre-colonial Nigerian cities recorded gradual growths in general terms. Where and whenever they existed their growths were associated with one basic feature: they controlled the spatial economic order; and provided spaces for cultural interaction. At colonization, the British introduced another socio-economic pattern of development characterized principally by a new hierarchy of administrative centers and a colonial export-oriented cash-crop economy. This resulted in the dislocation of the pre-colonial traditional urban economies and their system in Nigeria, thus affecting city development patterns. Cities then grew quite in relation to the impact of colonialism on the socio-economic life of the country. And most of Nigeria's major cities today emerged out of this colonial impact.

Okonkwo (2013) further indicates that, the immediate post-colonial city growths were gradual in process and responded to the not very dynamic socio-economic activities of an independent Nigeria. The devolution of self-government to Nigerian made possible new experiments in local administration and resulted in the creation of new units and centers which were more intimately related to the perception and interests of the people. But the growth patterns of major urban centers obeyed the urban structures established by the colonial administration. With increasing urbanization as a result of cities new position in socio-economic propagation in an independent Nigeria, the colonial urban structures, which up till date direct physical development in the major centers, started constituting an obstacle to urban growth.

This phenomenon according to Okonkwo (2013) was nation-wide, affecting mostly state capital cities such as Enugu. New employment opportunities became available with the emergence of many industrial units in these urban centers. In addition, the creation of 19 states, each with its own capital city, stimulated a drift of population to these capitals with the associated demand for housing both for official and for private residential uses. These developments produced a great pressure on the sizes of urban centers in Nigeria.

Urbanization brought people from rural communities to the urban areas. **Sijuwade (2010) indicates that, w**e have seen that rural-urban migration brings workers to cities that are already burdened with surplus labor. In search of better life and economic empowerment, people move to cities and all resulting in urbanization and it has consequences especially, in provision of housing for the people.

Urbanization which occurs without adequate industrialization, sufficient formal employment or secure wages, has condemned burgeoning urban populations in the Third World to poor-quality housing. The problem has been compounded by a lack of government funds for housing subsidies, by inflated land prices boosted by housing needs and speculation, and by real-estate profiteering on the part of the upper and middle classes. The operation of the class structure of Third World cities nowhere more geographical explicit than in the composition and working of the housing market. Only the small upper and middle classes in Third World cities have income, job security and credit worthiness to purchase or rent houses in properly surveyed, serviced and legally conveyed developments (Dickenson, 1983).

The same small upper and middle classes in Third World cities have benefited from government sponsored housing programmes in the past. In his Housing and Environmental Planning, Olu-Sule (1988) indicates that, prior to 1973 government, activities in public housing had been quite sectional and favored only the working class elites in the society. The poor and low-income were relegated to the background. For example, during the first Development Plan period, 1962 68, no attention was accorded housing generally. It was under the town and country planning. Government's policy to house the low-income and the underprivileged did not crystallize even during the Second National Development Plan of 1970 74. In spite of the N49 million allocated to Town and Country Planning, housing was overshadowed by other priorities of the planning department.

Housing as major government social service venture did not receive any priority attention it deserved until the Third National Development Plan of 1975 80 when the Federal Government of Nigeria allocated the sum of N2.5 billion to housing for the creation of 202, 000 units mostly for low-income families. The defective and ineffective methods of allocating these houses to the low-income, the medium-income and under which the underprivileged masses received their shares is the bone of contention in the Nigeria public housing policy.

The 1980 85 Development Plan when N1.6 million was allocated to housing sector did not achieve any better success than its predecessor. The plan included the construction of 200, 000 housing units; provision of staff quarters and staff housing loans; site and services programme and urban development in collaboration with the

World Bank. In addition to Federal Government budgeting efforts, the state governments committed the sum of N1.1 million to the housing sector during 1980 85 Development Plan. The core of the problem in all these Development Plans -1962 68 to 1980 85 was not the financial allocation or the units completed, but who got the houses. Hard evidence exists that those who benefited from the general government financial capital investment in housing sector has been the upper-income families (Olu-Sule, 1988).

Living in the urban areas, the low income and the poor segment of the communities must find where to live and continue their search for the urban area's greener pastures. Akindelly (2009), in line with Bamidele (2010), indicate that, one noticeable issue in the society today is the rate at which people (including youths and adults) migrate from the rural to the urban areas. Like a paradox, while the cities (urban areas) are increasing in population, the rural areas are decreasing. According to Akindelly (2009), one of the factors that is responsible for rural -urban migration is lack of inadequate social amenities and facilities in the rural areas. These include pipe born water, electricity, good roads, hospitals, schools, recreational centres (like Stadium, Zoo, Amusement park) among others. Inadequate jobs in the rural areas also make many youths to migrate to the urban areas that can provide better opportunities for them.

From Akindelly (2009), Bamidele (2010) and **Sijuwade (2010), t**he influx of people from Lagos, other cities and rural to urban areas in search of greener pasture, is putting pressure in the urban areas' housing and accommodation industry.

BBC (2013) indicates that, urbanisation has been proceeding without the economic growth and increased prosperity that historically accompanied the growth of cities in other regions across the globe, and this should call for sober reflections and commensurate positive action. Predominantly poor countries have predominantly poor cities.

Even worse, the economic growth in urban areas has not kept pace with the increase in the urban population. The result, as the Lagos situation patently exemplifies, has been the increasing urbanisation of poverty. This must not be treated as an inevitable reality. It must be changed. Research indicates that up to two-thirds of all urban dwellers in Africa end up in informal settlements, without adequate access to such basic services as water and sanitation. Alagbe and Adeboye (2005) indicated that the first dilemma of an urban migrant in Lagos is the question of an adequate house. With little resources, financial or otherwise, the drastic option of illegally occupying a vacant piece of land to build a rudimentary shelter is the only one available to them. This is the genesis of the development of squatter settlements and slums which has been seen as a social evil that has to be eradicated. This reaction towards slums has not helped the more basic question of adequate housing for all.

In Enugu, Nwachi, et al (2012) in their *Critical Evaluation of the Ogui Slum in Enugu, Nigeria* stated that, the high rental value of core city areas has always influenced the formation of slums at the peripheries or outskirts of towns and cities of the developing world. However, a peculiar inner-city slum that has persisted over the years is the Ogui slum in Enugu, Nigeria. Nwachi, et al (2012) further indicated that, the unprecedented

influx of people into Enugu in the early 1970's overstretched the existing facilities in the city and turned the indigenous land of Ogui into a slum.

For the poor (population) segment of the urban areas, in the process of finding a place to live, Aduge-Ani (2013) indicates that, a family of seven persons, which comprises the father, mother and about five children live in one room apartment. These people don't even have spaces for bathroom as they take their bath in open spaces. To the residents of these settlements, fresh air is an expensive community, because the tight space they live in makes fresh air a luxury.

In Abuja's case, lack of accommodation has become the bane of most Abuja residents. During the Mallam Nasir el-Rufai administration of the Federal Capital Territory (FCT), many residents of Abuja lost their houses to the demolition exercise. That incident, however, contributed to the high cost of securing accommodation in the city centre and even in the satellite towns. The influx of people into Abuja to look for greener pastures has helped to worsen the situation. To the average civil servant, securing a befitting accommodation in the FCT, irrespective of its location, is not only a challenge, but also an uphill task. Decent accommodation has continued to constitute a big problem to Abuja residents. Houses located at Garki, Maitama, Asokoro, Wuse, Jabi and Utako districts are practically beyond what the middle and low income earners can afford. This growing trend of high cost of accommodation has indeed pushed the staff of many government organizations to form cooperative societies in order to acquire landed properties through mass housing schemes. It provides a window for members of the cooperative societies to own houses (Web Team, 2011).

A lot of studies and publications are pointing and stating that the major challenges confronting and destabilizing the growth of Abuja is the population increase and shortage of housing to sustain the influx of people moving into the city. In his own words, “the Minister of the Federal Capital Territory, Senator Bala Mohammed, has blamed the housing and infrastructure deficits in the FCT on the influx of expatriates and people from other parts of the country. Mohammed said that the daily influx of people to the FCT has been affecting government's efforts to increase the housing stock and infrastructure development. He noted that the attraction to Abuja had made the demand for housing, infrastructure and utilities to grow in geometric progression. He further indicated that it is important to note that despite the efforts of this administration to increase the housing stock and fast-track infrastructural development, Abuja still suffers both housing and infrastructure deficits. This is because the territory remains a major attraction to both Nigerians and expatriates. People living in various flashpoints of crisis in the country see the city as a safe haven. In the event of any major crises in their various towns of abode, people relocate to Abuja in droves” (Punch, 2012).

According to Abuja City (2013), Abuja and the FCT have experienced huge population growth; it has been reported that some areas around Abuja have been growing at 20% to 30% per year. Squatter settlements and towns have spread rapidly in and outside the city limits. Abuja City (2013) further indicates that, tens of thousands of people have been evicted since former FCT Minister, Nasir Ahmad el-Rfai started a demolition campaign in 2003.

The questions are, who are the people mostly affected by the shortage of housing and the high cost of securing housing accommodation in both the urban and rural areas? As, stated by Mbeki (2009), of an estimated 1 billion people in the world who are trapped in a cycle of grinding poverty and despair, a disproportionate number live in sub-Saharan Africa. In this account, Mbeki (2009) analyses the plight of Africa and concludes that the fault lies not with the mass of its people but with its rulers the political elites who contrive to keep their fellow citizens poor while enriching themselves.

The poor citizens, according to Bamidele (2010), are most of the workers who cannot afford to live in the city proper, find their way to the squatter settlements and uncompleted or abandoned buildings within the city which punctuated all high-brow areas of the city and many.

That segment of the communities, rendering services to the rich (high brow areas of the communities) that government's housing policies failed (figures 2a to 2d).

Pictures of poor citizens serving the rich and affluent communities.



Figure 2a. Lagos Street Manager, sweeping Ahamadu Bello Way



Figure 2b. Victoria Island Lagos corn roasting spot



Figure 2c. Victoria Island, Lagos, fruit seller



Figure 2d. Lagos State Waste Managers at work

Source: the author

The expanding poor population of both the urban and rural areas deprived by the failed government's orthodox housing delivering schemes. The expanding poor Nigerian population who have no lands and money to build their homes and squat anywhere they see and provide services needed to maintain the rich communities (figures 2a to 2d). The rich and affluence get their housing rent subsidized, the low income who are underprivileged live in poor dilapidated and deteriorating houses in the midst of modern well serviced shelters for the affluent (Olu-Sule, 1988).

The people, according to Uji and Okonkwo (2007), frustrated by the inadequacies and failure of the conventional approaches to provide urban shelter and services to a significantly large enough proportion of the poor in the urban areas of the developing nations, these ever-increasing class of urban populations have to resort to squatting on public or private land, either by invading and forcefully occupying or leasing such land (illegally sub-divided) on which they hurriedly construct (through self-help) their shelter

from any available materials using any readily affordable and available technology (figures 3a to l).

The available materials to the poor citizens are clay/laterite soil, plant leaves, off-cuts and left over aluminum pans from the rich citizen's construction sites (figures 3a to 3l) are the materials, they can get at no cost to them. With the clay/laterite soil and plant leaves available to them anywhere they find lands, according to Uji and Okonkwo (2007), they would hurriedly construct (through self-help) their shelter. Hurriedly constructing their shelter, they would reverse back to the old style of housing (mud housing) and applying their own technology of hanging together, off-cut aluminum pans to cover the units as the case may be.

Reversing back to clay/laterite, they would bake their clay as practiced hundred years ago and according to Smirnis (1998), the basic process of making clay, preparing and molding it into shape and finally cooling has not changed much in the thousands of years since the first arch of sun-baked brick was constructed about 4000 BC. Quoting the Brick Institute of America, Smirnis (1998) further indicates that, “Brick has a history of its own, but it also has created and shaped history for thousands of years. Its use throughout time has been as dramatic as the Egyptian pyramids and as subtle as a neighborhood subdivision. Likewise, the date 5600 BC identifies the first known cement based floor. Later, the Egyptians used a mortar of partially burned gypsum to cement massive lime stone blocks to construct the Great Pyramid near Cairo. Smirnis (1989) further states that, to build aqueducts and the Colosseum, Romans made a hydraulic cement of slaked lime and volcanic ash that hardened with the addition of water. Hydraulic cement was reinvented in the 18th century by an English engineer, and in 1824, a Leeds bricklayer, Joseph Aspdin, invented Portland cement, so called because the resulting concrete looked to him like stone quarried on the Isle of Portland.

According to Smirnis (1998), the natural attributes of brick and concrete make them a more permanent, often safer, construction choice. However, another primary reason the popularity of these materials have endured over time is that, unlike building materials relying on scarce or non-renewable resources, they are made from abundant, readily available ingredients. Brick originates from the earth's clay, a nearly inexhaustible natural resource. Clay mining does virtually no harm to the environment, there is no waste during the manufacturing process, and energy costs for production is low. Concrete is made from water, aggregate (stone, sand, gravel) and Portland cement. Portland cement itself is made from calcium, silica, alumina and iron. Cement manufacturing makes use of recycled materials and concrete can be recycled. While thousands of years later, the manufacturing process remains basically the same for brick and concrete, modifications have created stronger, more colorful building materials with many forms and shapes to choose from, as confirmed by Ofodeme (an expert in Hydraform blocks, representing CooJike Hydrant, Adazi-Nnukwu).

Pictures of local building materials and off-cuts from the rich and affluent communities



Figure 3a.
Atani roof material.



Figure 3b. Palm frond material used as fence

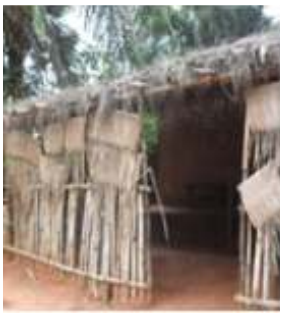


Figure 3c. Bambo, Atani and other materials.



Figure 3d. Palm frond.



Figure 3e. Palm frond and Zink.



Figure 3f. Palm frond combination



Figure 3g.
Off-cut aluminum



Figure 3h. Off-cut aluminum and other materials



Figure 3i. Used Zink.



Figure 3j. Wooden fence.



Figure 3h. Mud house covered with Zink in 1970s.



Figure 3l. Ruminant of 1920's mud fence.

Purpose of Study. The purpose of this study is to bring to the attention of all, that bad government housing policies are forcing especially, the poor citizens into living in unhealthy environment, in communities where they build their homes with local and available building materials including, clay/laterite soil and plant leaves and materials as was the case hundreds of years ago.

Aim of Study. The aim of the study was to identify, how bad government housing policies have jeopardized housing delivery systems in the country and affecting poor citizens especially, those migrating from rural to urban areas in search of greener pastures, who live in quick-fix homes built with local and natural materials because they could not afford high and expensive renting prices within the city proper.

Objective of Study. The primary objective of this study was to produce a well informed document that will detail and point to the fact that, poor government policies and implementation programmes have not alleviated pains and urban poverty in the Nigerian urban centers as a result, in the process to survive and provide roofs over their heads, the poor urban communities depended solely on their immediate and natural environments (clay/laterite soil, plant materials), off-cuts and rejected building materials from the rich citizen's construction sites in providing their shelter as was the case during the prehistoric days.

Methodology

The research adopted quantitative research methods that embraced survey, archival and observational methods. It gathered data from both primary and secondary sources. Primary sources included, interviews (oral, telephone, television), questionnaires and photographs. Secondary sources included, literature reviews from journals, previous works and books. 255 questionnaire were designed and randomly given out to respondents in poor Enugu, Lagos and Abuja communities between May and December, 2013. In each of the three cities, 85 questionnaires were randomly given out to adults.

Out of the 255 questionnaires given out in the three cities' poor communities, asking, in the recent time, if they have used clay soil, native plant leaves, off-cut aluminum pans and bamboo in building their houses, 214 (84%) responded “Yes” while 41 (16%) said “No” (table 1A). A closer look at the cities poor communities revealed that although, 84 percent of the respondent admitted that they have used clay soil and other local building materials in building their homes, that virtually all of them used recycled building construction materials including, rejected planks, asbestos ceiling materials, plastic, Zink and a list of others. Those were among the materials they called local materials.

Among the 16 percent that indicated “No” to the question, a few of them said that while they have not used clay products, they have used plastic covers and plant leaves in protecting themselves from adverse weather conditions. In other words, more than eighty-four percent of the respondents have used the materials, but the survey did not reflect that.

TABLE 1A

In the recent time, have you used clay soil, native plant leaves, off -cut aluminum pans, etc, in building your house?

	NUMBER	Percentage
YES	214	84
NO	41	16
TOTAL	**255**	**100**

Source: the author's field work

Among the 84 percent that responded "Yes," 98 percent came from Abuja, 87 percent from Lagos and 67 percent were from Enugu (table 1B). Abuja was high because Abuja is the fastest growing city in the country. Adeyemi (2013), observed that Abuja was the fastest growing city in the country, with attendant population growth which had in turn, resulted in over stretching of available infrastructure. The infrastructure would include, housing for the residents, buildings in disrepair, traffic jams, bad-roads, lack of pipe born water, shortage of electric supply, poor social services, markets squares, overcrowded and noisy markets squares, overcrowded government establishments, improperly planned and collapsing surrounding and support cities. That indicates that, more people move to Abuja and would have to settle in make-shift homes.

TABLE 1 B

The number of people who responded yes and no, when asked, in the recent time, if they have used clay soil, native plant leaves, off -cut aluminum pans, etc, in building their houses?

City	NUMBER	YES		NO	
	#	#	%	#	%
LAGOS	85	74	87	11	13
ABUJA	85	83	98	2	2
ENUGU	85	57	67	28	33
TOTAL	**255**	**214**	**84**	**41**	**16**

Source: the author's field work

When asked whether the materials used in building their houses were local materials and from their area, 229 (90%) out of the 255 respondents indicated "Yes" while 10 percent responded "No" (table 2A). The question was a bit misleading. A lot of the respondents indicated that they answered "Yes" because they collected their building materials from their area's building and construction sites and not necessarily because they have used clay products. They also indicated that the bricks used in most of their entrances as steps and water buffers were equally collected from construction sites and in most cases, around paving stone companies.

Table 2A

Were the materials used in building your house local materials and from your area?

	Number	Percentage
YES	229	90
NO	26	10
TOTAL	**255**	**100**

Source: the author's field work

Out of the 90 percent who responded ”Yes” to the question, 100 percent of the Abuja respondents indicated that the materials used in their houses were local materials and from their area (table 2B). Ninety one percent of the Lagos respondents equally answered “Yes” while 79 percent came from Enugu. Quoting remarks made by a lot of the Abuja respondents, “Abuja has a lot of construction sites and that made it easy for them to collect their building materials and at no cost. However, when there was a cost, it was minimal.”

TABLE 2B					
If the materials used in building your house are local materials and from the area, did you prepare them yourself?					
City		**YES**		**NO**	
		#	**%**	**#**	**%**
ENUGU	85	67	79	18	21
LAGOS	85	77	91	8	9
ABUJA	85	85	100	0	0
TOTAL	**255**	**229**	**90**	**26**	**10**

Source: the author's field work

One hundred percent of the Abuja respondents indicated that they prepared their materials themselves, but upon further investigation and questioning, a lot of them admitted that the materials were there and that they cut them to their desired sizes and that was their understanding of preparing the materials themselves. When asked if they used clay soil products, almost all of them indicated “Yes,” and that they used clay for flooring after which the floor would be covered with carpets. Some admitted using clay soil in building their sleeping beds, seating areas in and around the building and cooking stands for their cooking pots. For some, clay soil was not used in building their houses, but used as furniture and innovatively.

In Lagos, most of the respondents indicated that they live in the water and in the saw mill area with abundance of wood products and saw dust. A few of them indicated that they have used saw dust panels in building the walls. Saw dust would be glued together in panels and allowed to dry after which, they were used as wall panels. When asked if the government is doing a good job in providing housing for the poor people, 90 (35%) out of the 255 of the respondents answered “Yes” while 165 (65%) answered “No” (table 3A).

TABLE 3A		
Is the government doing a good job in providing housing for the poor people?		
	Number	**Percentage**
YES	90	35
NO	165	65
TOTAL	**255**	**100**

Source: the author's field work

Out of the 35 percent that answered "Yes," that the government is doing a good job in providing housing for the poor people, 20 percent came from Abuja, 54 percent from Enugu while 32 were from Lagos (table 3A). Among the 65 percent who indicated that the government is not doing a good job in providing housing for the poor, 80 percent were from Abuja, 68 percent from Lagos while 46 percent came from Enugu (table 3B).

TABLE 3B

If the government is doing a good job in providing housing for the poor people by area.

City	**Number**	**YES**		**NO**	
		#	**%**	**#**	**%**
LAGOS	85	27	32	58	68
ENUGU	85	46	54	39	46
ABUJA	85	17	20	68	80
TOTAL	**255**	**90**	**35**	**165**	**65**

Source: the author's field work

It was not hidden, the response from the respondents depended on the area and the love for the government in pover. In Enugu, it was "Chime is trying," commonly heard within the poor communities. In Lagos, the poor community was apprehensive, but did not hesitate to indicate that Fashola was more interested in canals and have ignored their interest. In Abuja, the poor communities criticized all aspects of the government and have not seen anything positive in the government and that could attribute to the high response in Abuja that agreed that the government is not doing well in providing housing for the poor.

Findings

Today, and in Nigeria, the poor communities are gradually going back to mud/laterite buildings although, under a new name, Hydraform blocks. Hydraform gained its name from a South African company, one of the world leading masonry construction and the manufacturers of Hydraulic Block machines, championing and producing both the machines used in producing the products and the products. Now, all compressed clay/laterite soil blocks are commonly known as Hydraform blocks. Although the industry is not well marketed in Nigeria, the products seem to be gaining attention especially, in estate developments and rural housing schemes in poor neighborhoods and urban poor settlements. The production does not necessarily require any special skill or extensive training and the products are environmentally friendly and could be produced anywhere, even on the job sites. The machines are portable and easily moved around (figure 4a and 4b). The products are fast, easy to produce and used. Both the machines and the products are cost effective and create innovative ways of building, especially, with the interlocking dry stacking provisions.

Because Hydraform block production does not require special skills and sophisticated

training, it may encourage the use of quacks and boost laziness. Poor mixing of the materials could immensely impact the products and bad clay soil with plant roots could leave holes in the product and when decayed, may affect the strength of the structure especially, when exposed to heavy rain or water logged area.



Figure 4a. Ejike Ofodeme, an expert in Hydraform blocks, representing CooJike Hydrant



Figure 4b. Hydraform block molding machine.

Source: Author's fieldwork, 2013.

The author visited a Hydraform plant, Coojike Hydrant, a small Hydraform plant in Adazi-Nnukwu, Anaocha Local Government Area, Anambra State. The operator, and an expert in Compressed Clay/laterite soil (Hydraform), Ejike Ofodeme, indicated that cement is added to their products to enhance them. According to him, one bag of cement could produce up to ninety tablets (as described in the industry) of Hydraform blocks and the company can mold any form especially, the wall copings. Ofodeme further indicates that their company produces Hydraform blocks in any color and according to one's desire. For the black ones, they would only add black carbon, a powdery material generally known as carbon. Ofodeme further indicates that carbon has different colors and that clay/laterite soil have different colors, depending on want and geographic area; the company would produce according to the client's desire. Njoke et al (2012), the appearance of mud bricks reflects the material they are made from. They are thus earthy, with colour determined by the colour of clays and sands in the mix.

Ofodeme, in discussing the cost of the company's products, indicates that the products are relatively cheap and an inexpensive way to build. The six inches tablets cost sixty Naira each while the nine inches cost eighty Naira each, however, depending on the cost of materials at the time of the request. When compared with cement, the Nigeria's Cement Manufacturing Industry Representative, in his overview of the Cement Industry, indicates that, as at 2006, demand for cement was estimated at over10 million metric tons. With a Year on Year (YOY) growth rate of 3 percent per annum,

this figure is expected to grow to 11 million and 13 million by end of 2010 and 2015 respectively. This high rate is fuelled by factors such as increase in GDP, growing population and per capita income, mortgage sector reforms, high demand for home ownership, increasing need for infrastructural development especially within the urban areas. The Representative further states that, such increasing demand has widened the demand-supply gap as government's efforts towards controlling the inequality have so far proved abortive. The situation has therefore not changed as cement still remains very scarce and expensive. A bag of cement currently sells for N2, 200 compared to N625 in 2002, representing a Compound Annual Growth Rate (CAGR) of 23%. He further indicates that, due to inherent scarcity, high cement prices continue to increase construction costs making building unaffordable to potential buyers.

Coojike Hydrant's machines were locally manufactured and mold two tablets at a time while the conventional machines mold one at a time. The company is currently constructing a molding machine that could mold twenty concrete blocks at a time and also, a machine that could mold interlocking stones of any design.

As indicated by Ofodeme, Coojike Hydrant adds cement to clay soil to enhance the strength and improve on the quality of their products. Confirming the addition of cement to clay/laterite soil in hydraform blocks, Njoke et al (2012), in their Vanguard editorial, indicated that, although the hydraform technology is a South-African, that Afolayan (President of Real Estate Developers Association of Nigeria) said that hydraform uses 7. 5 percent cement.

Prior to 1957, the Nigerian cement industry was one of the earliest import-substituted industries in the country (Nigerian's Cement Manufacturing Industry Representative). The cement industry in Nigeria has experienced immense growth over the past few years. With a population of over 140 million people and a growth rate of approximately 3% per annum, the demand for and consumption of cement is expected to increase (Nigerian's Cement Manufacturing Industry Representative). The increase will still remain unaffordable to the poor urban communities who solely depended on their immediate environment for survival.

People rush to the urban areas in search of greener pastures, but got cut up in difficult living and in situations they never bargained for. Instead of going back home and farm for living, they preferred to stay back in the urban areas and suffer. In the process of trying to survive, they would do whatever is possible to get the roof over their heads. Getting the roof over their heads means, living in the open fields, poor settlement areas and anywhere they can find abandoned and uncompleted buildings, open lands they can build their make-shift home, using clay/laterite found around where they found open lands to build their make-shift homes, using off-cut aluminum panels as walls, fencings and roofing. Bamboo is used in building walls and fencing their compounds (figures 3a to 3l).

The study discovered that the poor communities do not necessarily benefit from the government housing policies and that most of the government policies have always favored the privileged and the politicians and as supported by Mbeki (2009), of an estimated 1 billion people in the world who are trapped in a cycle of grinding poverty and

despair, a disproportionate number live in sub-Saharan Africa. In this account, Mbeki analyses the plight of Africa and concludes that the fault lies not with the mass of its people but with its rulers the political elites who contrive to keep their fellow citizens poor while enriching themselves.

According to Njoku et al (2012), successive Nigerian governments have paid lip-service to the need for alternative sources of building materials in view of the escalating cost of the conventional or imported ones. But with the high cost of land, funds, materials and labor almost making affordable housing a mirage, the need to resort to homegrown building materials has again taken the front burner. One of the materials that readily comes to mind is burnt bricks which experts posit, could be cost effective especially in building houses for the lower income and vulnerable groups (Njoku et al, 2012).

In February 2009, the Nigerian Federal Housing Authority investors' toolkit, carefully stressed the needs for more housing in all the states of the federation to accommodate the nation's urgent housing needs. It states that, to fulfill its obligation and bridge the Nigerian housing gap, the Federal Housing Authority (FHA) must explore more than its conventional housing delivery models. The housing deficit is ever increasing and urgent measures are necessary to make more homes available to the people (Jamide, 2009). The Federal Housing Authority fully aligns itself with this patriotic objective, particularly given the need to aggressively combat the nation's housing deficit now put at 12-16 million (FHA, 2009). By admission, FHA admitted that its conventional housing delivery models have not worked and knowing that the communities need housing and urgently, has not done enough in the housing provision policies and still operating the old and failed policies that have betrayed the poor communities. The betrayal has given rise to the poor communities interest in going back to old systems of providing shelter, using clay/laterite soil in constructing mud buildings, using plant leaves as roofing materials, collecting aluminum off-cuts and Zink from construction sites and using them in building their homes (figures 3a to 3l). All these, reincarnates, the old building styles and in some respects, rejuvenates poverty in poor communities. It may suffice to say that the materials used today are stronger and more advanced compared to the ones used hundreds of years ago, but the use of machines and bonding solutions have enhanced the strength of the products.

Conclusion and Recommendations

Hundreds of years ago, peasantry and subsistence living existed and people depended on their surroundings for their survival. It was nomadic living, when people were wanderers and survived from their immediate surroundings. Survival included, materials used in putting roofs over their heads, the food they eat and treatments. People were poor and had no choice as it was the situation they found themselves in and lived with it. Today, the times have changed. Lifestyle has greatly improved and the study has established that because of bad governance and government policies, a greater majority of the Nigerian population still lives in abject poverty and so much depended on their communities to survive. The government has not properly planned for a sustainable environment for the people. In the view of Njoku et al (2012), which this research shares, successive Nigerian governments have paid lip services to the need for alternative sources of building materials in view of the cost of the conventional or imported ones.

A major hurdle to achieve sustainability is the alleviation of poverty. It has been widely acknowledged that poverty is one source of environmental degradation. Such acknowledgment has been made by the United Nation's Brundtland Commission report. Our Common Future and the Millennium Development Goals. According to the Brundtland report, “poverty is a major cause and effect of global environmental problems. It is therefore futile to attempt to deal with environmental problems without a broader perspective that encompasses the factors underlying world poverty and international inequality. ” Individuals living in poverty tend to rely heavily on their local ecosystem as a source for basic needs (such as nutrition and medicine) and general well-being. As population growth continues to increase, increasing pressure is being placed on the local ecosystem to provide these basic essentials. According to the United Nation's population Fund, high fertility and poverty have been strongly correlated, and the world's poorest countries also have the highest fertility and population growth rate.
Retrieved from: http://en.wikipedia.org/wiki/Sustainability

The poor communities of the world are suffering and the governing bodies who have failed them have not bothered to ask why. This study recommends that, the players (government and policy makers) in the communities should be discussing today's environment for tomorrow's generation. The players, decision makers, policy makers, planners, architects, engineers, and developers should be tied and bonded as one family, challenged with the communities socio-economic needs, development and growth. The players should share ideas.

Ideas! They should come together to develop and implement documents that will guide and promote the development and growth plan of the communities, documents that would lead the communities to an unprecedented indoor-outdoor development and standardized growth. Unfortunately, some of the players and decision are action oriented and their actions are sometimes, parochial, short-lived and without vision and the communities have not asked why? Implementation of the existing laws and conditions of engagement must be strengthened and encouraged. Upgrading and promoting socio-economic needs, educational standards, especially in the universities and more importantly, in the schools' of policy learning, urban and regional planning, architecture, engineering, building and construction management must be encouraged to alleviate pains and suffering in our poor communities and generations to come. .

Drawing analogy from architectural theories and finding lasting solutions to urban poverty and sub-standard living, according to Architecture (2011), the earliest surviving written work on the subject of architecture is De architectura by a Roman architect, Virtruvius in the early 1st century. In his book, Vitruvius indicated that a good building should satisfy three basic principles:

- Durability - it should stand up robustly and remain in good condition.
- Utility - it should be useful and function well for the people using it
- Beauty - it should delight people and raise their spirits.

These early standards (attributes) set by Vitruvius have remained till today, a measuring stick for good architectural work and every architect must as close as possible, try to address them.

At that era, Leone Battista Alberti, who supported Vitruvius and his architectural attributes (durability, utility and beauty), went further stating in his essay, De Re Aedificatoria that beauty is a matter of proportion although supported by ornaments. Following Alberti's idea that beauty comes from properly proportioning a building and that, "the rules of proportion were those that governed the idealized human figure, the Golden mean," the most important aspect of beauty should be originally incorporated in the body of the creative work and not something added to improve on it (superficial) and that the original part of the composition should be based on universally recognizable truth and acceptable standards.

The debate on what architecture is and what constitutes a good architecture continued and in the 19th century, an English art critic, John Ruskin wrote in his **Seven Lamps of Architecture,** published in 1849 that "Architecture was the art which so disposes and adorns the edifices raised by men ... that the sight of them contributes to his mental health, power, and pleasure." Ruskin believes that the aesthetics of a building is more important as it create first impression that is healthy to the viewer. He went further to state that "a building is not truly a work of architecture unless it is in some way "adorned." In his views, a building could be well-constructed, proportions well resolved, materials properly used and the building very functional, but if it is not admired and pleasant to the users, it is not a good architecture.

The views continued and a renowned 20th century architect, Le Corbusier made a sharp and simple clarification between "ideals of architecture and mere construction" Le Corbusier wrote: "you employ stone, wood, and concrete, and with these materials you build houses and palaces: that is construction. Ingenuity is at work. But suddenly you touch my heart, you do me good. I am happy and I say: This is beautiful. That is Architecture" (Architecture, 2011). Our communities are lacking the housing attributes (durability, utility and beauty) and that is why, it is difficult for us to say, "I am happy and I say: This is beautiful. That is Architecture."

The modern day policy makers, architects, engineers, planners and developers must try and create environments, after experiencing, one would say, "I am happy and I say: This is beautiful. That is my community.

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