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Rural Restructuring and Rural Change in Akwa Ibom State, Nigeria

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1. Introduction

Although economic opportunities differ markedly in many rural communities, this is largely dependent on the natural resources composition and the level of technological development at the local level. Traditionally, the dominant economic activities in rural communities include but not limited to farming, fishing, lumbering, mining, and hunting (Yusuf and Ukoje, 2010). Hence, many authors describe rural areas as places of limited and unfavourable economic opportunities. But in recent times, particularly since the beginning of the twentieth century, observations have indicated that most traditional rural societies have been continually changing.

There is a dramatic reduction in rural employment structures, changes in migration patterns and ageing (Woods, 2005). Hence, life in contemporary rural areas is different from what it used to be in the last sixty years (Hedlund, 2013). Ultimately, it is not an understatement that the changing characteristic of rural areas is what is theoretically referred to as rural change in the academic literature. Rural change is a global phenomenon; it manifests not only in a single aspect but cuts across the conglomerate of the social, economic, cultural and physical sub-sectors of the rural system. However, this recognition continues to gain prominence in academic discussions more than ever. But then, what is of interest in this discussion anchors not only on rural change but also on the process that orchestrates this dramatic change that is experienced in most rural communities around the world. Ultimately, practical experience and a review of available literature reveals that rural change does not just occur; it results from a number of interrelated technological,

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economic, cultural and social processes that take place in a global linkage (Hedlund, 2013). It was in an attempt to give a theoretical explanation of rural change that scholars developed a multi-dimensional concept of "rural restructuring" (Ilbery, 1998; Marsden et al., 1990; Woods, 2005).

2. Objectives of the Study

Rural restructuring is a process; yet, its understanding and circumstances surrounding its application in the academic literature differ significantly among scholars in the contemporary age. It is based on this inconsistency in academic understanding and attempts to provide adequate explanation of the rural restructuring phenomenon and its relationship with rural change that has brought about the development of the present work.

However, the work contains theoretical considerations of rural restructuring; the forces that drive the rural restructuring process and characteristics of rural change with documentary evidences in Nigeria. In its approach, the work draws its argument from existing academic literature and empirical experiences with much emphasis on changes that occur on rural land use in Akwa Ibom State using remote sensing and GIS functionalities to drive home its argument.

3. Conceptual Framework

It is common knowledge that when there is an economic upsurge and steady increase in urban population; the sprawling characteristics of these phenomena and their effects work together in a complex manner that orchestrates certain conditions and actions that alter the traditional rural societies particularly within the rural-urban convergence fringe. How does this happen? Let us focus on those activities aimed at improving the economic welfare of the rural population. Notable among such activities include but not limited to rural road construction to ease vehicular movements, siting of small and medium scale industries in rural communities, development of rural housing programmes, improvement in educational facilities, rural electrification, as well as information and tele-communication facilities among other public utilities. It is to be noted that the development of each or a combination of these activities in rural areas also facilitates the proliferation of residential buildings with modern architectural designs and facilities, retail shopping outlets, hair-dressing and barbing saloons, motor mechanic workshops, restaurants and drinking parlours, among other small and medium scale business activities initiated and developed by individuals and corporate organisations. Notice also that at every point in time, each of these activities involves the modification, conversion or re-organisation of the rural landscape. It is, therefore, at the critical point of giving a theoretical explanation of the changing characteristics of rural areas that scholars developed the multi-dimensional concept of rural restructuring (Marsden et al., 1990; Ilbery, 1998; Woods, 2005). In essence, rural restructuring is an act of changing, modifying or re-organising of the rural content other than the traditional structures for the purpose of enhancing economic activities and improving the

standards of living at the local level. Rural restructuring takes place not only in a single sector of the rural economy, but cuts across the entire economic, social, cultural and physical landscapes in rural areas. One important point of note is that the process of rural restructuring does not just occur; but is driven by a number of factors. What then are the drivers of rural restructuring process?

3.1 Drivers of Rural Restructuring

It is a common understanding that the process of rural restructuring does not just occur but is driven by some identifiable factors. Taking a critical look at these factors, it is quite convincing that the commonest factors that drive this rural phenomenon include but is not limited to availability of natural resources with potential for economic development, rural in-migration and population increase, rural development policies and programmes. Others are technological development, globalisation and social Modernisation (Woods, 2005).

3.1.1 Availability of Natural Resources with the Potential for Economic Development

Under normal circumstances, rural areas that are naturally endowed with diverse natural resources that have potential for economic development usually attract attention of both private investors and even the government. Natural resources include minerals; forests and biodiversity; water; fisheries; erosion control systems; air and temperature regulation systems. They constitute the rural natural capital that provides goods, flows, and ecological services that support life in rural communities. However, their availability and accessibility has positive relations with entrepreneurial development (Glaeser, Kerr, & Ponzetto, 2010; McGranahan, Wojan, and Lambert, 2011; Stephens and Partridge, 2011). Rural areas with distinctive qualities of natural resources thrive well in socio-economic values and wealth creation. They attract private investors, industrialists and the government who explore and effectively utilise available opportunities for purposes of economic development. Such development opportunities encourage rural in-migration and changes in demographic composition in affected rural communities.

3.1.2 Rural Immigration and Population Growth

The possibility for rural areas to maintain a stable demographic composition and economic growth is dependent on the level and patterns of migratory movements. One of the patterns of migration is the rural in-migration. Rural in-migration is the process of inward movement of people into rural communities. It is associated with a vibrant rural economic environment, although there are other factors which may be encouraging the so called people-led migration (McHugh, 2001). Although the number of people involved in the process differs significantly, it is interesting to note that rural communities that have favourable economic conditions with high degree of connectivity and interaction with the outside world trigger attract inward movement of people and this eventually brings about significant changes in population and ethnic composition.

For instance, in 1978, China's economic reforms under Deng Xiaoping transformed the centrally planned rural economy, with accompanying processes of industrialisation and urban expansion. This rapid and far-reaching economic transition brought about challenges in the rural economy with significant changes in demographic structures, employment opportunities, community organisation, lifestyles and standards of living, accessibility and cultural complexes in the rural economy (Longa, Li, Liua, Woods and Zoua, 2011). Similarly, available statistics reveal that the economic base in rural Ireland witnessed a significant structural change as a result of the processes and patterns of industrialisation and globalisation as rural population grew steadily with population of foreign nationals increasing from 5.8 per cent (224,261) in 2002 to 12 per cent (320,096) in 2011 (O'Sullivan, 2013). Rural in-migration is significant to socio-economic and demographic transformations. However, as population increases, the demand for development infrastructure aimed at increasing the rate of resource consumption and raising the standard of living at the local setting becomes inevitable. In many circumstances, achievement of this development is a function of government policies and programmes.

3.1.3 Government Policies and Programmes

In most developing societies, empirical experience shows that urban areas are highly favoured in the distribution of development infrastructure; hence they are viewed as centres of economic attraction. This is the reason individuals, corporate organisations, government and its agencies compete effectively for economic and administrative spaces. In addition, owing to the favourable economic opportunities, a reasonable number of people particularly the middle aged and highly productive class migrate from rural areas in search for greener pastures in urban centres. This incidentally contributes to increase in population and pressure on urban infrastructure. In an attempt to check this pattern of rural-urban migration and subvert pressure on urban infrastructure, responsible governments initiate development policies and programmes in rural areas with a view to strengthening resources consumption and raising the standard of living in rural communities. In Nigeria for instance, it is through the consciousness of the importance of rural areas in the nation's economic development process that successive governments have in the past been initiating series of rural development programmes. A review of the literature reveals some of these development programmes to include:

1. National Accelerated Food Production Programme (NAFPP) which was launched during the military government of General Yakubu Gowon in 1973.
2. Agricultural Development Programme (ADP) launched in 1975 and funded by the trio of the World Bank, the Federal and State Governments. Its main objective was to raise productivity, increase farm output, income and standard of living of the rural people. In its approach, farmers were made to have access to agricultural extension services, trainings and affordable farm inputs.

3. Operation Feed the Nation (OFN) initiated by General Olusegun Obasanjo in 1976.
4. The River-Basins Development Authority (RBDA) established in 1978 and further expanded in 1983. The programme was an integrated rural development approach initiated to harness water resources across the respective river basins in Nigeria. The programme brought the development of water resources mostly for irrigation, navigation and the construction of dams for hydro-electric power (HEP) generation in the country. This programme helped to open rural roads and provided other infrastructures, thus raising the hopes of the rural people (Ering, Out and Archibong, 2014).
5. Better Life Programme (BLP) introduced by Mrs. Mariam Babangida in 1986. Its aim was to change the fortunes of the poor rural women and improve their wellbeing.
6. The Green Revolution (GR) programme initiated by the civilian administration of Alhaji Shehu Shagari in 1980 was intended to ensure food sufficiency and rural development in the country.
7. Agricultural Credit Guarantee Scheme (ACGS). This programme was meant to provide easy access to loan facilities at the local level. A programme aimed at encouraging high productivity and strengthening the financial base of the rural economy.
8. Directorate for Food, Roads and Rural Infrastructure (DFRRI). This policy was initiated by the government of Ibrahim Badamosi Babangida. The programme was aimed at developing rural infrastructure so as to improve the standard of living of the majority of people in rural areas.
9. The Niger Delta Development Commission (NDDC). It was established in 2000 and empowered to formulate policies and guidelines for the development of the Niger-Delta region in Nigeria. Ever since the commission was established, a number of development programmes including the construction of roads, jetties and waterways, health, education, employment, industrialisation, agriculture and fisheries, housing and urban development, water supply, electricity and telecommunications in line with the master plans and schemes designed to promote physical development of the Niger-Delta region.

In Akwa Ibom State for instance, it has always been the determination of successive governments to initiate policies and programmes aimed primarily at developing rural areas in the state. One of such programmes is the development of Inter-Ministerial Direct Labour Programme (IDL) in 1999. With this IDLP, a number of rural roads have been constructed linking local government Headquarters in the state, rural electrification policy has made it possible that nearly all rural communities have been linked to the national grid. At the same time, the distribution of communication masks across the state has made it possible for people in rural communities to communicate even with the outside world at the comfort their homes. In many instances, government's educational facilities (primary, secondary and

tertiary institutions) and other public utilities including water, health and legal institutions in many local government areas have been renovated with modern architectural designs changed the aesthetics of rural environments and make them more appealing. However, government's rural development policies and programmes alone would not have been enough to modify and re-organise rural structures without improved technology, equipment, machines and other technologically developed devices employed in the whole process of providing rural infrastructure.

3.1.4 Technological Development

Technology is simply the art and science of applying human knowledge in all sorts of human endeavours such as in engineering, medicine, culture and music aimed at satisfying human needs (Abdulkareem, 1992). Over the years, there have been improvements in technological development, inventions, or methods of doing things other than the usual ways in which social groups provide themselves with material objects of their civilisation. When this happens, technological development takes centre stage. Technological development, therefore, is the process of maximising potential and developing knowledge capacity to exploit nature in order to meet daily human needs (Rodney, 1972; Nnoli, 1981; Ake, 2001). It has a link with acquisition of a variety of ways and processes that aid invention of machines, equipment, computers and other devices required to support human efforts aimed at transforming the society. With technology today, many rural dwellers are able to produce series of documents with the use of printing machines, cover long distances using motor vehicles on lands and aeroplanes in the air, communicate easily using cell phones, radio and television sets, use numerous materials in the building and construction of residential homes, and even weapons used to secure lives and properties have continued to progress more than ever.

According to Stiglitz as cited in Nwanegbo and Odigbo (2013), the transformation of the rural society and emergence of new social and economic orders are critical indicators of technological development. In many rural communities, technological innovations have made it possible for the rural people to access highly developed machines, equipment and other technological devices including refrigerators used for food preservations, clippers used for haircuts, generating sets used to power homes and offices, motor vehicles used for transportation of people and goods, earth moving equipment used for road construction and farming operations, guns used for the protection of lives and properties, communication devices like mobile phones, television and radio sets among others.

Although in many circumstances, technological development results in pollutions and other negative effects that sometimes are detrimental to human life and the physical environments. Ultimately, acquisition of technological ability does not come merely because of experiences, although this may be a factor, but it comes in line with the conscious efforts to monitor what is being done, try new ways of doing things, accumulate added skills, increase ability to respond to new pressures

and keep track of economic developments. Before we forget, one important point of note is that the level of technological development varies from region to region and from country to country. In spite of this imbalance in technological advancement, many technologically deficient countries of the world ceaselessly have access to and make use of sophisticated machines and equipment. However, this possibility is a function of trade liberalisation and global economic integration - a medium through which opportunities are opened for the transfer of technology and capacity building from the highly developed nations to the technologically disadvantaged countries of the world.

3.1.5 Globalisation

Sometimes, when people refer to the world as a “global village”, it becomes much more difficult to argue on the contrary. Nowadays, everything that happens in the world is connected together and rapidly circulated in various means with strong signals that capture global attention (Woods, 2005). Globalisation, therefore, is a multi-dimensional process that brings about the inter-connection of the human society from around the world. It embodies a transformation in spatial organisation of social structures and transactions that generate trans-continental or inter-regional flows of networks of activity, interaction, and exercise of power (Held, McGrew, Goldblatt and Perraton, 1999). Although it has its own disadvantages, globalisation has made it possible for multi-national companies from around the world to locate their business activities in any part of the world where access to raw materials becomes possible after due consultations and concrete arrangements with the national governments of the benefiting countries are concluded. With bilateral understanding, the possibilities of the multi-nationals companies shipping their machines, equipment, and manpower to the preferred locations is inevitable in many circumstances. For instance, the vast stock of natural capital – crude oil and natural gas deposits in the Niger Delta region of Nigeria has positioned the region as the hub of economic attraction to oil and natural gases prospecting and production companies in the region. Notable among these global forces are ExxonMobil Nigeria Unlimited, owned and operated by the United States of America, Shell Petroleum Development Company (SPDC), a United States-based subsidiary of the Royal Dutch Shell commonly known as Shell incorporated in the United Kingdom with headquarters located in Netherlands (About shell, 2013). Total Elf - a multi-national oil and gas company was established in 1942 as Compagnie française des pétroles in France, Chevron - an American multi-national energy corporation, and **Nigerian Agip Exploration** incorporated in 1996 as well as Aluminium Smelter Company of Nigeria (ALSCON) which is owned by the Federal Government of Nigerian but managed by RUSAL of Russia among others are currently in mineral exploration and production in the region. Over the years, the region is highly connected with the global world following incessant transfers of modern equipment, machines, other working devices and the human capital that are indispensable in oil and gas exploration and extraction activities. The global network of tele-communications,

the internet and social media have become stronger with influential signals on social and cultural inclinations in rural societies subject to the ever-increasing social modernisation processes.

3.1.6 Social Modernisation

According to Karl Marx, human beings are fundamentally, necessarily and by definition social beings who beyond being gregarious creatures, cannot survive and meet their needs other than through social co-operation and association. Their social characteristics are to a large extent given, stamped on them from birth and affirmed by socialisation processes. Therefore, by producing and reproducing their material life, people must necessarily enter into relations of production which incidentally are independent of their wills. This has over the years been the benchmark of social structures in rural communities. In the contemporary age, empirical evidence indicates that most rural societies no longer exhibit their traditional ways of doing things and relating with one another. They continually abandon their old lifestyles and embrace the ever-changing foreign values. The act of changing from the old ways of doing things and relating with another brings about the idea of social modernisation. Hence, social modernisation refers to the acts or improvements in methods and arrangements of pursuing societal goals. This manifests in all ramifications of human endeavour, governance and institutional arrangements aimed at providing social infrastructure at the local, state, national and regional levels. Social modernisation involves the attainment of higher education, improvement in information and communication technology, expanding transport and communications infrastructure (Woods, 2005). This paradigm believes in spatial diffusion of innovations and social reforms from city centres and developed nations to the rural landscape. It comes in diverse ways, as many rural dwellers adapt to the ever-increasing modern values usually in the form of agricultural modernisation, economic modernisation, and infrastructure modernisation (Woods, 2010).

In the United States of America for instance, the Tennessee Valley Authority was created in 1933 to facilitate navigation, flood control, and electricity generation. Similarly, in the 1960s, as part of the “War on Poverty” with a strong commitment to invest in infrastructural development, the Appalachian Regional Commission (ARC) was equally created as a United States federal-state partnership that works with the people of Appalachia to create opportunities for self-sustaining economic development and improve quality of life and bring the region into socio-economic parity with the rest of the world. Ever since these programmes were launched, they have contributed and promoted regional development through investments in dams and other physical infrastructure mostly in the construction of highways. In recent times, the United States of America has been very committed in investments in energy and tele-communications infrastructure, community facilities and rural housing, among other public utilities.

In Nigeria, the Niger Delta Development Commission (NDDC) is also saddled with the responsibility of providing physical infrastructure in the Niger Delta Region. For

instance, in Akamkpa Local Government Area of Cross River State in Nigeria, stones (granite) that serve as the common and regional material used mostly in all aspects of civil construction in the region are being crushed with highly developed technological and mechanical devices other than resorting to physical human efforts. In Issiet Ekim - a typical rural community in north eastern part of Akwa Ibom State in Nigeria, empirical experience revealed how some earth moving equipment (swamp boogie) were deployed to open up a large swampy area for sand dredging operations in the rural community. For a smooth evacuation of the products from the production site, another earth moving machine usually referred to as "bulldozer" was also used to open up the community roads to link already existing roads for trucks and other vehicles to function effectively.

Also included in this aspect is improvement in electricity supply and rural housing delivery, changes in the choice of food consumption and traditional structures. The growing increase in higher education participation outside one's own country is a typical example of educational modernisation; this to a greater extent changes the life pattern of many young, adults, and employment structure, households, demographics, and travel patterns experienced in the rural communities. Under the globalisation process, the economic, political, technological and cultural values of developed countries spread to rural communities in other parts of the world. With the influence of these global forces on local technologies, the paradigm of social modernisation points to the reform process and transformation propelled with strong impulses to adopt modern technologies in the whole task of formulating development policies and programmes.

As the people continue to embrace new technologies and the ever-changing modern values, the increasing private and public interests in rural land uses leads to excessive modification and conversion of rural land uses. Governments and corporate organisations, in their social responsibility through policy formulation and rural development planning ensure that some of the rural roads that were once dilapidated and impassable have now been restructured, redesigned and reconstructed in order to ease transportation as the number of car ownerships in rural communities continues to increase unabated. Equally, there are indications that the traditional thatched houses in most rural communities continues to be ebbing and disappearing as urban workers and government retirees now relocate, build new houses with modern architectural designs and take permanent resident in rural communities.

The development of educational and health facilities have also changed lifestyles in rural areas. With, rural electrification, many homes are now conversant with the use of electric cookers to cook and refrigerators for food preservations, the use of clippers and dryers in barbing and hair- dressing salons is a common reform from old methods in many localities. Rural households today can comfortably communicate with the outside world using communication devices including radio and television sets, mobile phones and computers subject to the modernisation of information and tele-communication infrastructures in rural communities. Ultimately, these factors work instantaneously in the restructuring process and assist

in no small measure to alter the traditional economic, social, cultural and physical landscapes in most rural communities. This corroborates the conclusion that rural restructuring takes place in a variety of spheres of life, where processes of change are causally linked (Hoggart and Paniagua (2001). It involves interactions of technological, social, economic, cultural and physical resources in global networks that produce multiplier effects on other sectors of the rural economy (Ilbery, 1998; Robinson, 2004; Woods, 2005, 2010, 2011). It is interesting to note that rural restructuring and rural change are interrelated and invariably indicating a network of cause and effect.

4. Effect of Rural Restructuring on the Rural Economy

Most geographical analyses anchor on the need to establish a relationship between two or more variables. Such a relationship is usually that of "cause and effect". Based on our understanding of the rural restructuring process, it is important to note that the outcome of rural restructuring is the changing characteristics experienced in modern rural societies in recent times. It is, therefore, in an effort to describe the changing scenario that scholars developed the paradigm of rural change. Rural change manifests not only in a single sector, it cuts across the economic, social, cultural and physical structures of the rural landscapes.

4.1 Economic Characteristics of Rural Change

Traditionally, a greater percentage of economic activities in rural communities have high correlation with agricultural production. But in many circumstances, people also engage in trading, handcrafting such as basket making, weaving, pottery, carpentry, clothing and construction of local housing. Others also engage in tree felling and hunting based on the characteristics of the natural environment which determines livelihood strategies. At the local setting, globally recognised stronghold of the rural economy – agriculture is continually declining in its roles. They continue to witness significant structural change resulting from the processes and patterns of globalisation (O' Sullivan, 2013). The case of China's rural transformation is arguably very unique both in scale and the speed at which it occurs, combining the same changes that were experienced in rural Europe known to have resulted from intense urbanisation, industrialisation and the decreasing importance of agricultural employment during the early-to-mid twentieth century (Cloke et al., 1997; Hoggart and Paniagua, 2001; Robinson, 2004; Woods, 2005, 2010, 2011; Gant et al., 2011). In Nigeria, for instance, if we cast our minds back to the colonial period when Nigeria's economy was largely dependent on agriculture prior to the discovery of crude oil in 1950s, we should be able to assess what were the situations like bearing the rural change paradigm in mind, so as to be able to take a stand on current debate involving rural change in the Nigerian perspective. With particular reference to the Niger Delta Region in Nigeria, with its richness in stock of natural capital (forest resources, water, crude oil and natural gas deposits) and relevance in the national economy. The constant operations of the multi-national oil companies and economic

development tend to have initiated significant changes we witness in most rural communities in the region over the years.

4.2 Social Characteristics of Rural Change

The common social characteristics of every rural society comprise demographic structures, ethno-linguistic, leadership structures, gender relations, degrees and forms of cooperative activity, inheritance systems and many other ways of how people relate with one another in a rural setting. Traditionally, their social responsibilities, attitudes, orientations, intentions take people into account by showing pleasantries and companionship with friends and relations all with the main aim of enhancing the welfare of the entire community. But in modern rural societies, it is interesting to note that changes in economic activities have lasting impact on migration patterns, community relations, population structure and many other social characteristics. For instance, the interactive contributions of the Niger Delta University (NDU) established in 2001 have greater influence on the population structure of the host communities of Amassoma, Ogobri and Ebeni located on the bank of River Forcado/Niger and Nun River in Bayels State coupled with the fact that these communities are the administrative Headquarters of Ogboin North and Mein Oyiakiri Local Government Areas. The populations of the three communities are presented in Table 4.1:

Table 4.1: Population of Host Communities of Niger Delta

Year	Amassoma	Ogobri	Toru-Ebeni
1991(Actual)	36,454	2,305	4,250
1996	43,142	2,728	5,030
2001	49,730	3,151	5,810
2006	56,318	3,574	6,590
2011	62,906	3,997	7,370
2016	69,494	4,420	8,150
2021	76,084	4,843	8,930
2026	82,670	5,266	9,710
2031	89,258	5,689	10,490
2036	95,846	6,112	11,270
2041	102,434	6,535	12,050
2046	109,022	6,958	12,830
2051	115,610	6,958	13,610
2056	122,198	7,381	14,390

Source: (Okoba and Okolo, 2010)

At an annual growth rate of 3.6 per cent according to the National Population Commission (NPC), the population of Ammasoma, Ogobiri and Toru-Ebeni will be 122,198, 7381, and 14,390 in 2056 respectively. Apart from changes in demographic structures, many rural communities experience significant changes in other aspects

of social structures. In some localities for instance, it is worthy of note that most traditional rulers are actively involved in partisan politics which in turn has negative influences on their stools, the control of rural lands is no longer in the hands council of chiefs and family heads but tending to be completely individualistic as a result of excessive sales of rural lands to foreign investors. Resulting from the emergence of numerous social groups, there are divisions in social organizations including the church. Crime proliferation and juvenile delinquency among the youths in rural communities have generated concerns; in fact, absolute control of social activities in most rural communities is no longer in the hands of the traditional institutions. These and many others constitute what we refer to as the social characteristics of rural change.

4.3 Cultural Characteristics of Rural Change

Every rural society has its common identifiable cultural features and belief systems- religion, customs, ceremonies, restrictions and prejudices are major characteristics of every rural society. But over the years, the pace of rural restructuring has initiated remarkable changes in the fabric rural cultural heritage. Experience shows that as many rural communities experience breakthrough in socio-economic structures particularly in education, rural electrification, information and tele-communication technology and improvements in global trade liberalisation, their exposure and relationship with foreign cultures become more significant such that foreign cultures now become a part of most rural communities. The common characteristics of rural change reflects mostly in spoken languages, modes of dressing, choice of food consumption, education, beliefs and other traditional practices. In many rural communities in southern Nigeria, the practice and worshipping of traditional deities have been completely abolished and the people now embrace the doctrines of the Christian religion.

4.4 Physical Characteristics of Rural Change

Apart from the changing characteristics that reflect on economic, social and cultural sectors of the rural economy, changes on the physical structures in rural communities is also conspicuous and very relevant in this discussion. However, this aspect of rural change phenomenon is substantially a reflection of land use characteristics. Naturally, land is an immobile part of the earth surface. It refers to the earth's surface where all other aspects of the earth's natural resources are firmly attached. In 1995, Food and Agriculture Organisation (FAO), defined land as:

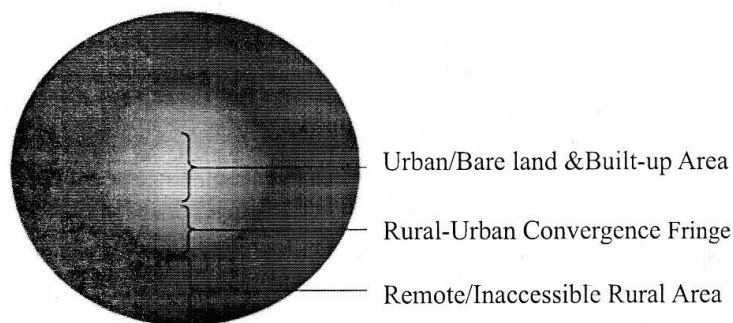
a delineable area of the earth's terrestrial surface, encompassing all attributes of the biosphere immediately above or below this surface, including those of the near-surface climate, the soil and terrain forms, the surface hydrology (including shallow lakes, rivers, marshes and swamps), the near-surface sedimentary layers and associated groundwater reserve, the plant and animal

populations, the human settlement pattern and physical results of past and present human activity (terracing, water storage or drainage structures, roads and buildings).

In the same vein, Meyer and Turner(1995) conceptualised land as connoting the biophysical state of the earth's surface and its immediate sub-surface which embraces the quality and type of surface vegetation, water and the earth's minerals. These descriptions are the bases that determine the potential use(s) of a particular piece of land. Adjudging from economic sensation and although it may be limited in supply, land is a factor of all possible productions, a store of value and wealth of all nations.

In rural societies, a greater percentage of available land is predominantly used for primary activities including farming, fishing, lumbering, mining, and hunting which are the major characteristics and the mainstay of the rural economy (Yusuf and Ukoje, 2010). But in many circumstances, subject to incessant rural restructuring activities, some portions of rural landscapes are modified, converted or restructured for purposes of road network development in order to ease rural transportation, education, housing and industrial development. It is the persistence initiation of these anthropogenic activities over temporal and spatial scale that brings about remarkable changes on the physical structures of the rural landscape. In many circumstances for instance, empirical evidences indicate that the physical structures of rural societies are no longer sustainable. They are changing and changing more than ever responding to successive trends of rural restructuring. A typical model of rural land use change is exemplified in Figure 4.1:

Figure 4.1: Rural Land Use Change Model

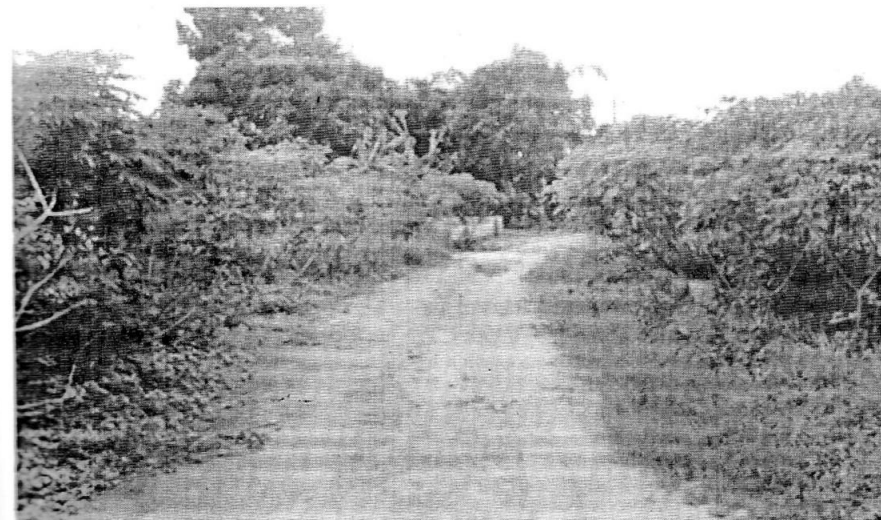


Source:

The information on the figure depicts three circular segments of land use characteristics although the lines of demarcation are imaginary. The core or inner segment represents the urban/bare land and built-up areas. It can also be taken to represent the highly developed regions of the world where all development forces are in constant operation (Ituen, Johnson and Nyah, 2014). Ultimately, urban/built-up areas were rural areas with little or no development infrastructure some decades back, but suddenly changed through forces of development processes and restructuring.

However, development forces come from city centres and developed countries of the world facilitated by processes of globalisation en-route rural areas particularly through the rural-urban convergence fringe as indicated in the figure. The rural-urban convergence fringe is the hub at which restructuring processes including road construction, agricultural production, industrialisation, educational and housing development revolve. They work together in a complex manner and continually penetrate the remotest rural landscapes with their ever-changing effect that transforms the rural landscape into a multi-functional and heterogeneous society over temporal scale. Although the boundary between the rural-urban convergence fringe and the remotest rural areas may not be visibly demarcated, the outer segment of the rural land use model represents the remotest part of rural areas which in many circumstances may not easily be accessible. The physical characteristics of this segment symbolises the natural and evergreen vegetative composition which to a greater extent is rarely disturbed. In most developed societies, this category of rural land use is preserved with unflinching support of legislative procedures for future economic development. However, the model depicts natural characteristics of a typical rural landscape and provides the basis for understanding the nature of rural land use change through its explanatory power. The basis for having an understanding of rural land use change model begins with the grasp of the picture on Plate 4.1.

Plate 4.1: A Section of A Virgin and Undeveloped Rural Road in Ikot Akpabio



Sources: Author's fieldwork, 2013.

Opening up a rural road is an aspect of rural restructuring. However, it promotes not only the buying and selling of agricultural produce within the community, but also encourages sales of rural land and further construction of private, corporate and public buildings which in turn leads to community expansion as shown in Plate 4.2.

Plate 4.2: Residential Building with Fence under Construction in a Rural Community



Sources: Author's fieldwork, 2015.

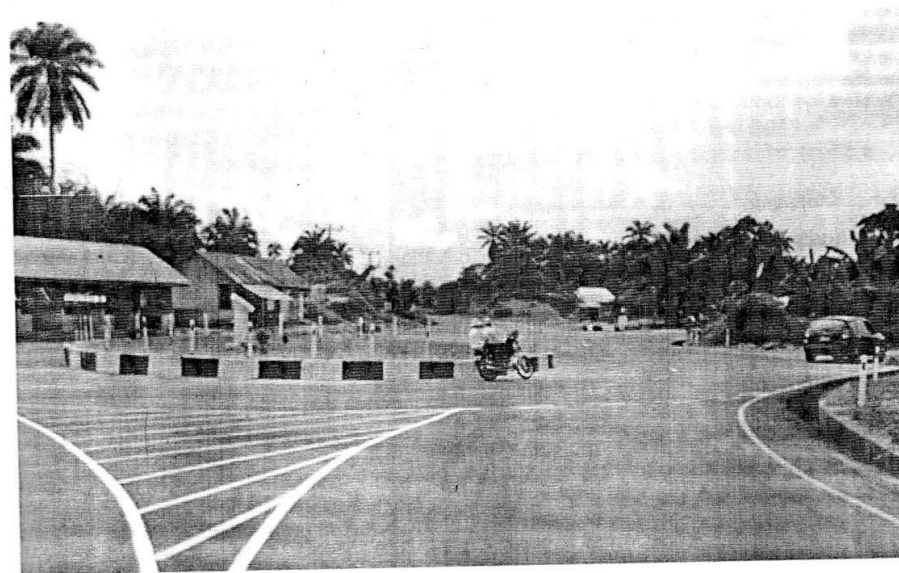
In some locations, rural roads are constructed with tarred-surface and drainage systems particularly those constructed in a built-up area as shown in Plate 4.3a and 4.3b. This is one of the key factors that promote rural change with regard particularly to the physical structures and aesthetics of rural communities.

Plate 4.3a: Newly Constructed Ikot Abasi-Nda-Ikot Esop-Ikot Abiyan-Idiaba-Odot Road



Sources: Author's fieldwork, 2017.

Plate 4.3b: Newly Constructed Round About Connecting Five Rural Communities in Nsit Atai.



Sources: Author's fieldwork, 2017

These pictorial descriptions provide the basis for understanding changes that take place on rural communities. However, studies relating to changes that occur on rural communities can adequately be conducted with strong emphasis on analysis of land use.

4.4.1 Analysis of Rural Land Use Change

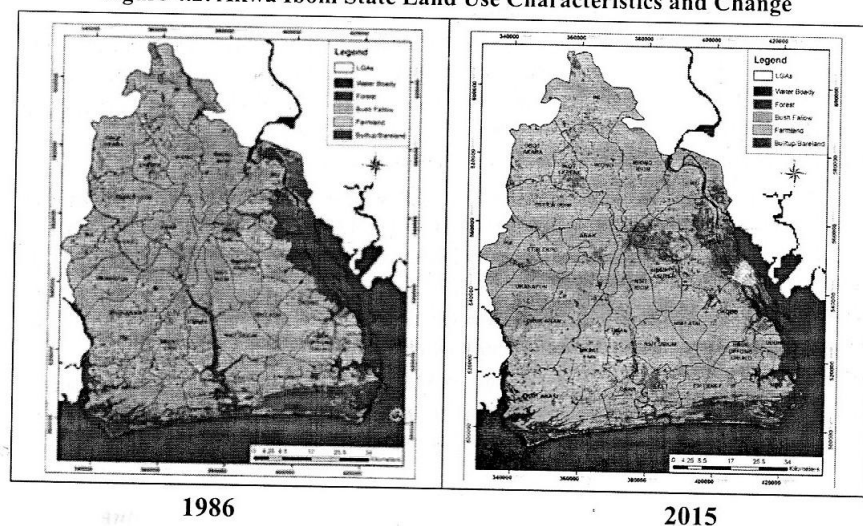
Analysis of rural land use change provides the basis for having a vivid picture and the extent of modification and/or conversion of vegetative composition of rural areas using spatial and temporal dimensions. However, the success of this sensitivity and line of thinking depends effectively on application of land use classification systems. Although there are several land use classification systems, the commonest land use classification system adopted by many researchers is the one developed by the United States Geological Surveys which involves application of remote sensing and GIS technology (Anderson et al. 1976). The technology is an effective and realistic method of spatial analysis because measurement of changes in land use is a function of spatial scale (Briassoulis, 2000). It depicts the relationships between selected land use characteristics and measures key attributes of urban, sub-urban and remotest rural environments accurately at the requisite levels of spatial, temporal and spectral resolutions (Cowen and Jensen, 1998). However, the U. S. Geological Surveys uses a 2-level hierarchy of land use classification system as exemplified in Table 4.2:

Table 4.2: The US Geological Survey Land Use Classification System

LEVEL I	LEVEL II
1 Urban/built up land	Residential, public, commercial and services transportation, communications, utilities, industrial and others.
2 Agricultural land	Cropland and pasture, orchards, groves, vineyards, nurseries, ornamental, horticultural areas. Confined feeding operations and other agricultural lands.
3 Rangeland	Herbaceous rangeland, shrubs and mixed rangeland.
4 Forest land	Deciduous forest lands, evergreen forest lands, and mixed forest lands.
5 Water	Streams, canals, lakes, reservoirs bays and estuaries.
6 Wetland	Forested wetlands and non-forested wetlands.
7 Barren land	Dry salt flats, beaches, sandy areas other than beaches, bare exposed rocks, strip mines, quarries, gravel pits and transitional areas.
8 Tundra	Shrub and bush tundra, herbaceous tundra, bare ground tundra, wet tundra and mixed tundra.
9 Perennial snow and ice	Perennial snowfields and Glaciers

Source: Kleckner (1981)

For instance, for the purpose of expanding our knowledge and serving as a point of reference in this discussion, a level one exemplification of land use classification of Akwa Ibom State for 1986 and 2015 is represented in Figure 3.2.

Figure 4.2: Akwa Ibom State Land Use Characteristics and Change

Data on Figure 4.2 represent the first level of Akwa Ibom State land use systems classified into built-up area; farmland; bush fallow; natural forest; and water body for 1986 and 2015. The areal dimensions of each land use class for the two study periods are given in Table 4.3 to provide the basis for comparative analysis and conclusion.

Table 4.3: Areal dimensions of land use in Akwa Ibom State for 1986 and 2015

Land Use Class	Area in Km ² (2015)	Area in Km ² (1986)	Change	Percentage
Built-up	847.79	744.82	102.97	11.96
Farmland	2,111.27	1,881.51	229.76	26.69
Bush fallow	2,721.52	2,623.88	97.64	11.34
Natural forest	1,143.43	1,548.75	-405.32	47.10
Water body	392.93	417.97	-25.04	2.91
TOTAL	7,216.96	7,216.96	860.73	100.00

Data on table 4.3 represent the areal characteristics of the five classified land uses – built-up, farmland, bush fallow, natural forest and water body in Akwa Ibom State measured in Square Kilometres for 1986 and 2015. The built-up class comprised spaces used for residential, commercial, transportation, communications, public utilities, and industrial purposes. As at 1986, the dimension of this land use category was 744.82 Square Kilometres, but in 2015 due to restructuring processes (housing, road network and public utility development), urban space increased to 847.79 Km² showing an increase of 11.96 per cent. Farmland constituted the pieces of land that were used for agricultural production, pasture, orchards, groves, vineyards, nurseries, ornamental, horticultural areas and other agricultural land uses. In 1986, the total size of farmland was 1,881.51 Km², but increased to 2,111.27 Km² (26.69%) as at 2015. In the same trend, bush fallow increased by 11.34Km². This land use category contained more undergrowth trees at closer spaces with only one canopy featuring palm trees (*Elaeisguineensis*), scrubs, and the characteristics of shifting cultivation (Ituen, 2010). It is usually allowed to regenerate through natural processes after significant human interference or natural disturbance of the original forest vegetation (FAO, 2005).

Contrary to this trend, evidence has it that the size of natural forest was significantly reduced by 405.32Km² (47.10%) This land use category contained highly grown trees ranging between 30 to 70 metres in height. Some species served as canopies that shade the soil from direct sun rays. They were made up of hard and soft woods including mahogany (*Chlorophora*); Teak (*Tectoma Grandis*); Iroko (*Chlorophori Execelsa*); Obeche (*Tropochiton Sierexylon*); African oil bean (*Denteclecthra Macrophylla*). In many locations, natural forest spreads into the marine environment with common tree varieties including Indian Bamboo (*Pogonium Spp*) and Raffia Palm (*Raphia Vinifera*). Their distribution occurred mainly along the lower stretch of marine environments. Apart from identifying trees of distinctive characteristics, forest resources provide natural habitats for a vast variety of plants and animal species that

make up the "biodiversity".

A water body is a naturally occurring geographic feature usually identified in the form of lakes, streams, wetlands, rivers, seas, and Oceans. Within the same period, it reduced by to 25.04Km² representing 2.91per cent. Sequel to these changes arising from numerous acts of restructuring, some of the effects are identified as follows:

1. Reduction in the size of useable agricultural lands or rural farmlands.
2. Destruction of natural habitats in forest ecosystem which in turn leads to plants and animal extinction.
3. Destruction of natural water ways.
4. Promotion of surface erosion as well as sand deposition along water channels which reduces the size of water bodies.

Unless we forget, it is worthy of note that the main reason for classifying land use based on the U. S. Geological Surveys Classification System is for the purpose of resources description, prescription, prediction, evaluation, inventory and environmental impact assessment.

5. Conclusion

Rural restructuring is a process of changing, modifying or re-organising the content of the rural space for the purpose of enhancing economic activities aimed at improving the living standards of the rural population. Some of these economic activities include but not limited to road construction, rural industrialisation, rural housing programmes, improvement in educational facilities, rural electrification, and information and tele-communication facilities among others. However, this process does not just occur, but is driven by a number of factors which include presence of natural resources and potential for economic development, rural in-migration and population increase, rural development policies and programmes of the government, technological development, globalisation and social modernisation over time.

However, it is interesting to note that rural restructuring process or processes have remarkable effects on the entire rural landscape. A combination of effects constitutes what is now theoretically referred to in academic literature as rural change. Rural change manifests not only in a single sector, it cuts across the entire social, economic, cultural and physical landscapes of the rural economy. However, the most conspicuous aspect of the rural change phenomena manifests on rural land use changes. Based on these evidences, it is a common understanding that rural restructuring and rural change are inseparable phenomena that instantaneously take place on the rural landscape. Hence, the need to regularly carry out investigative analysis of rural restructuring and rural change has become very relevant in the contemporary geography so as to provide the basis for rural resources description, prescription, prediction, evaluation and assessment of rural environmental conditions and ensuring balanced development between rural and urban areas.

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