

THE IMPACT OF INDUSTRIAL CLUSTERS ON OVERCOMING POVERTY AND ENVIRONMENTAL DEGRADATION IN NIGERIA

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ABSTRACT

Industrial clusters constitute an array of linked industries and other entities important to competition. Industrial clusters serve as an employment index reflecting the relative size and economic strengths of local industries. Characteristic to these clusters is the uniqueness of their function, where the companies possess similar or complementary interests and the entire value chain exists within the cluster thus providing a holistic approach to employment and service delivery. Poverty and environmental degradation continue to attract regular inter-disciplinary debate mainly due to the fact that they, on one hand, affect all aspects of human existence and on the other hand represent an inextricable connection between population explosion and uncontrolled urbanisation which remains a growing trend in Nigeria, making the poverty-environmental degradation nexus a challenge which every generation attempts to find solutions for their abatement. This paper examines the role of industrial clusters in the Nigerian built environment, highlighting the efforts of various governments in the take off of these cluster industries and the extent to which these cluster arrangements have abated poverty and environmental degradation.

Keywords: Industrial clusters, Poverty, Environmental Degradation, Built Environment, Urbanisation.

INTRODUCTION

According to recent UN report, cities have emerged over the past 20 years as the world's economic platforms for production and innovation, helping people to escape poverty through better jobs and improved quality of life, albeit mass urbanisation has led to overcrowding, deepened inequalities and triggered a raft of environmental and other related issues. Between 1950 and 2005, the level of urbanisation

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increased from 29% to 49%, while global carbon emissions from fossil-fuel burning increased by almost 500%, a growth that is clearly unsustainable (UN-Habitat 2016). Current statistics from UN-Habitat (2016) reveal that in 1995, there were 22 large cities and 14 megacities globally; by 2015 both categories of cities had doubled, with the medium and small cities recording the fastest rate of growing urban centres with less than one million inhabitants which account for 59% of the world's urban population. Characteristic of these multifarious economic platforms are clusters of linked industries that play host to an array of inter-connected industrial activities which provide people with sustainable means of livelihood as well as impact significantly on the environment. Olaniyi and Kayode (2008) rightly posits that every society in history has faced the problem of shaping the environment it inhabited. Reynolds Stafford-Smith and Lambin. (2007) opined that a major environmental challenge of the 21st century is environmental degradation; it adversely affects the sustainable relationship between ecosystems and the livelihoods of people worldwide. The quest, therefore to strike a balance between nature's state of the environment and man's activities on the environment remains man's daunting challenge in this age of tremendous technological advancement. Architects have in the last few centuries turned to nature in an attempt not only to imitate but to discover design methods that resemble the evolutions in nature with the aim of achieving the resilient attribute of nature.

The poverty-environmental degradation nexus continues to attract constant debate as both form nucleus of a vicious circle where extreme human activities on the environment are due to poverty and environmental problems cause more suffering among the poor. According to World Commission on Environment and Development " many parts of the world are caught in a vicious downwards spiral: Poor people are forced to overuse environmental resources to survive from day to day, and their impoverishment of their environment further impoverishes them, making their survival ever more difficult and uncertain" (WCED, 1987:27). The Brundtland commission (WCED 1987), the World Bank's main report on the environment and development (World Bank 1992), and the United Nations Environment Programme Report (1995) on poverty and the environment all focus on the connection between poverty and environmental degradation. The 21st century has witnessed increased environmental degradation globally with annual forest loss estimated at 7.3million hectares between 2000 and 2005 (<https://www.worldvision.org.nz> 2016 download). Arild(1998)

noted that poverty reduction and environmental conservation represent two of the main global challenges facing this present age. This paper examines the role of industrial clusters in the Nigerian fabric, highlighting the efforts of various governments in the take off of these cluster industries and the extents to which these cluster arrangements have abated poverty and environmental degradation.

THE NIGERIAN BUILT ENVIRONMENT AND ENVIRONMENTAL DEGRADATION

The greatest strengths of African landscapes are their ability to support diverse vegetation resources and their resilience to natural calamities and climate change (Danjuma, Mohammed and Daura, 2014). Though as McCann (1999) opined the anthropogenic nature of African landscapes and constant changes as a result of human interference render the continent most vulnerable to environmental degradation. Nigeria prides herself as the most populous country in Sub-Saharan Africa with a population of over 150million and land mass of about 924,000km. The National Population Census data (FRN 2007) shows that most of the urban areas in Nigeria with small land mass have either exhausted their capacity to accommodate further population increase or are extremely limited. Ahiana, Dimuna and Okogun (2008) posits that there is disequilibrium between the population and the environment, a condition that has adversely affected the carrying capacity of the urban area in the country. Current report by the World bank (2005) reveals that the built environment in many developing countries, particularly Nigeria, is fast decaying and the factors responsible for this can be attributed to rapid urbanisation, rural-urban migration, decades of steady economic downturn, decay of urban infrastructure and negligence in urban housekeeping (World bank, 2005). The accelerated growth of the Nigerian urban built environment continues to present with it a myriad of attendant challenges. Ahiana et al., (2008) noted that the Nigerian urban built environment is saddled with the problem of non-compliance with building bye-laws and regulation. The major areas of default include zoning, setbacks, constructing along utility lines among others and the negligence has over the years resulted to environmental degradation.

Environmental degradation can be defined as "the deterioration of the environment through depletion of resources such as air, water and soil; it is defined as any change or disturbance to the environment perceived to be deleterious or undesirable (<https://en.wikipedia.org> 2016 download). The UN International Strategy for Disaster Reduction defines

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environmental degradation as "the reduction of the capacity of the environment to meet social and ecological objectives and needs". In Nigeria, Mba, Ude, Ume and Uchegbu. (2004) identified several types of environmental problems classified as ecological, poaching, habitat loss, desertification, soil erosion and pollution of the coastal regions occasioned by gas flaring and oil spillage. According to Danjuma et al.,(2014) environmental degradation of varying types and degree are generally un-evenly distributed in Nigeria, ranging from the less devastating such as sheet erosion and mild gullies to highly dangerous type such as loss of biodiversity, drought and loss of soil bio-physical characteristics. A typical environment in Nigeria maybe occupied with one or overlapping sets of degradation consequences. The effects of environmental degradation includes loss of biodiversity, poor patronage in the tourism industry and the economic implications, depletion of the ozone layer and the consequent global warming and the overall impact on human health.

Table 1: Sources and Effects of Environmental Problems

Environmental Problems	Sources	Effects
Slums and Squatter Developments	Rapid urbanization due to ruralurban migration and natural population increase (Abiodun, 1985); inadequate housing and infrastructure; legal dualism in land administration and control. Lack of proper monitoring of physical development activities in urban areas	Enhances rapid deterioration of physical environment and provide breeding ground for prostitutes, criminals and social miscreants. They constitute affront for human dignity with associated adverse health implications on residents, and thus negate the goal of environmental sustainability.
Urban Sprawl	Absence of updated master plans; uncoordinated spatial urban growth; decay of inner cities; land speculation and rapidly growing urban population	Depletion of green areas and open spaces resulting in the loss of biodiversity, air pollution and traffic congestion due to increasing use of private automobiles. There is also the issue of incompatible land use due to lack of planning and haphazard developments.
Pollution (land, air water)	Inefficient waste management systems, emissions from automobiles, industrial plant and power generating sets; gas flaring	Pollution general poses health risks to humans, terrestrial and aquatic lives. Land pollution through indiscriminate disposal of solid wastes provides breeding grounds

	(Figures 2 & 3); bush and refuse burning; solid and liquid minerals extraction activities and agrochemicals. Weak institutional and regulatory framework for enforcing appropriate legislations	For infectious disease vectors, while air pollution results in acid rains which destroy buildings and infrastructure. Oil Spillage is a threat to the livelihood of oil producing communities. While air pollution contributes to global warming by depleting the ozone layer
Urban Flooding	Absence of efficient storm water discharge system; ocean surge due to rise in sea level, extensive use of hard landscape elements; reclamation of swamps and natural storm water swales for building construction. Physical development on natural flood plains and non adherence to physical development regulations result to flooding in low lying cities like Lagos and Port Harcourt	Destruction of human lives, properties and means of livelihood as well as public infrastructure, leading economic losses. Destroys plants and animal lives, and thus leading to destabilization of the ecosystem which comes with adverse consequences.
Erosion	Indiscriminate destruction of vegetations for fuel and construction materials. Construction, installation of infrastructure, agriculture and mining activities	Threat to human lives, means of livelihoods and infrastructure as well as loss of land areas and reduction in biodiversity.

Sources: (Omiunu, 1981; Rashid, 1982; Olarinan, 1983; Odemerrho, 1988; NEST, 1991; World Bank, 1992; Anih, 2004; Muoghalu and Okonwo, 2004; Ijioma and Agaze, 2004; Nduka, 2004; Mba, 2004; Bulama, 2005; Ojeshina, 2005; UNHABITAT, 2005b)

Nigeria through the Federal Environmental Protection Agency (FEPA) had achieved the following major milestones in environmental protection and conservation of natural resources: development of the National Policy on the Environment; establishment of a National Council on Environment (NCE); establishment of a National Advisory Committee (NAC) on Agenda 21; review of National Environmental Policy Guidelines and Standards; enactment of the Environmental Impact Assessment (EIA) Law; establishment of a National Energy Policy; and enactment of Nuclear Safety and Radiation Protection Legislation. The goal of the National Policy on the environment is to achieve sustainable development in Nigeria;

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(a) Secure a quality of environment adequate for good health and wellbeing.

(b) Conserve and use the environment and natural resources for the benefit of present and future generations.

(c) Restore, maintain and enhance the ecosystems and ecological processes essential for the functioning of the biosphere to preserve biological diversity and the principal of optimum sustainable yield in the use of living natural resources and ecosystems.

(d) Raise public awareness and promote understanding of essential linkages between the environment resources and development, and encourage individual and community participation in environmental improvement efforts; and finally

(e) Co-operate in good faith with other countries, international organisations and agencies to achieve optimal use of trans-boundary natural resources and the effective prevention or abatement of trans-boundary environmental degradation.

One of the five major policy initiatives of the National policy on the environment is the abatement , remedial and restorative activities directed at the specific problems identified, and in particular;

- Problems arising from industrial production processes.
- Problems caused by excessive pressure of the population on the land and other resources.
- Problems due to rapid growth of the urban centres (www.nigeriatradehub.gov.ng 2016 download).

INDUSTRIAL CLUSTERS AND POVERTY REDUCTION

According to a report from the institute of development studies university of Sussex, United Kingdom (Nadvi, 2004).Economic definitions of poverty in the development literature have been primarily based on the ability to purchase goods and services that is, on income and consumption and on material possession or assets. From such calculations the income poverty line is derived and used to assess the proportion of people living below this threshold, and how far they fall in terms of the poverty gap in contrast, the dollar-a day poverty life introduced by the World Bank in the 1990. World Development report refers to household expenditure per person. Although criticized, it continues to be widely used as an easy yardstick to compare poverty levels across countries and over time. Economic definitions of poverty

thus focus on goods and services as measured through market (or imputed market) prices and the corresponding policy thrust in poverty reduction is on increasing incomes and consumption. There have been significant changes in development thinking on poverty over the last 25 years and a broader multidimensional concept of poverty has been increasingly adopted by actors in the international development arena (Kanji, 2002). While income consumption measures of poverty continue to remain important, there is greater consensus that a thorough understanding of poverty requires more comprehensive socio-economic analysis. This includes the need to incorporate the views of the poor people themselves, if poverty reduction policies are to be successful (Nadvi, 2004). Social dimensions of well being, particularly infant mortality, health and education are more regularly integrated into concepts of poverty as well as women equality and empowerment. These features of poverty are all reflected in the Millennium development goals. According to the United Nations Industrial Development Organisation (2006), the significance of poverty reduction in industrialization must be stressed in the context of;

(a) Employment generation and consequent income creation that industrialisation would bring about through stimulating rapid economic growth.

(b) Development of extensive industrial linkages within the industrial sector, and with other sectors of the economy in the course of industrialisation, in particular with agriculture and services.

After several scrutiny it noted that the best sector of industrialisation for poverty reduction must satisfy the following two conditions

(a) The sector must involve the poor widely and the growth of the sector must create opportunities of income generation by the poor effectively

(b) Development of the sector must be sustainable, meaning that the sector must be competitive at least in the long term.

Any intervention by the government and donors cannot be accepted as permanent as the sector must transcend from infant industry status and become independent and competitive (<http://www.unido.org> 2016)

- **Cluster features**

There have been widely held views over the decades that clusters can play an important role in fostering incipient industrial development especially in poor regions (Schmitz and Nadvi, 1999). Ways, in which

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clusters could potentially affect a poverty reduction agenda are myriad, the very presence of a cluster changes the context in which the poor live, by enhancing the ability of individual cluster actors, be they workers or producers, to potentially improve their well-being. Clusters allow local small producers to make more effective use of underutilized resources, such as small scale savings or family labour, generating incomes that they could not avail by operating in isolation. This is because the process of clustering engenders various benefits. This includes agglomeration gains to clustered firms, such as externalities in the market for labour, inputs, know-how and information, economics of Scale and scope as individual firms takes on specialized tasks through a division of labour. In resource – poor regions, or at early stages of industrial development, this can be especially significant promoting specialization by way of small steps (Schmitz and Nadvi, 1999)

In further considering the ways in which clusters affect poverty we will briefly mention three important aspects of clusters to assist in a better understanding of the role of clusters in poverty reduction. They are;

(1) Cluster features which include the clusters location, the types of firms within it and the types of employment generated and their relationship to poverty reduction.

(2) Cluster processes which include agglomeration gains joint action, cluster institutions and social capital.

(3) Cluster dynamics which focus on cluster growth upgrading and differentiation. Whichever way, these are looked and they have positive implication for poverty alleviation. In considering cluster features and poverty reduction clusters are far from homogenous.

Here are four distinctions offered in the literature

- Gulati (1997) in the context of Indian examples distinguishes between modern, urban and artisanal rural clusters. The former serve large metropolitan and export, markets, while the latter cater for more local demands.
- Sandee (2002) drawing on evidence from Indonesia describes a spectrum with “dormant”, clusters at one end – manufacturing simple items for poor rural consumers and providing ‘distress’ employment for those with limited income generating options, and ‘dynamic’ clusters at the other end – where firms are closely networked and can enter wider, even global markets.
- Schmitz and Nadvi (1999) distinguish between incipient clusters – those at an early stage of industrial development usually located in

poor areas producing for local markets with simple technologies and labour skills and mature clusters – relatively more advanced in terms of technology and skills, often producing for global markets and thus vulnerable to global competitive pressures

- Altenburg and Meyer-stamer (1999) distinguish between “Survival” clusters, “advanced” mass production clusters and “clusters of transnational corporations”. Their notion of “survival” clusters is similar to Schmitz and Nadvi “Incipient” clusters. Such clusters are in “poor areas where open or disguised unemployment is high, either in small towns or rural areas or on the outskirts of big cities”
- Mass production clusters are more advanced where firms produce for local markets but increasing face global competition pressure. Finally, clusters of transnational corporations are technically advanced foreign firms that locate in particular areas to draw on – regional agglomeration economics but with limited linked to local firms and institutions.

All these types of clusters have varying levels and degrees of significance in employment and income generation on the working poor and consequently on poverty reduction/alleviation.

Incipient or survival clusters are the obvious choice in terms of direct poverty impacts while more mature clusters can also have impact on poverty by generating employment and incomes for relatively low waged workers and their households and for the indirect effects on the wider economy (Nadvi, 2004). Although incipient clusters may not survive in the face of growing market competition, supporting mature clusters may result in more sustainable development for local communities, yet all have positive implication in tackling the poverty states of individual’s members and communities within and around the industrial cluster areas.

INDUSTRIAL POLICY IN NIGERIA 1962-2007

Industrial policy is a policy of a nation that helps guide the total strategic effort of a country which influences the development of different sectors and creates a stronger portfolio for national industry (Business Dictionary). Since the post independence era, achieving rapid economic development has been a primary focus of the government in their successions. This led to the launching of the Nigerian Industrial Revolution Plan (NIPR). This subsequently led Federal Government to the launching of comprehensive industrial plans that should run for decades.

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- **First National Plan (1962-1968)**

The first of these plans was the "First National Plan, dated to run from 1962-1968. This plan was made to focus on promoting industrialization through import substitution and a resource based strategy. It included "enabling the country to import key capital goods like machinery tools etc to facilitate the assembly of products within the country, and to encourage the manufacture of consumer goods.

- **Second National Development Plan (1970-1974)**

This plan was launched in 1970 after the civil war, the goal and theme of this plan was Reconciliation, Reconstruction and Rehabilitation. This plan was to promote even development and fair distribution of industries. Also, highlighted in this plan were diversification of the industrial sector, establishment and promotion of industries catering for foreign markets for the earning of foreign exchange.

- **The Third National Plan (1986)**

This is the famous Structural Adjustment Programme (SAP) which was not focused on industrialization component but it had an industrialization component. It was a plan that encouraged the use of local raw materials rather than the imported ones, and encouraged the use of local technology. The goal was to be accelerating the pace of industrial development and to make the industrial sector the prime mover of economic development.

- **National Rolling Plan (1990-1992)**

There were issues the Federal government argued then were holding back industrialization such as shortage of industrial raw materials, inadequate linkage among industrial subsectors etc. This first national rolling plan was set to tackle these issues. The government sought to make all areas of the country attractive to new investors using a package of incentives such as industrial layout and craft villages' development. In 2003, the Federal Ministry of Industry came up with a policy whose objective is to accelerate the pace of industrial development. The policy addresses that Nigerian's resources will no longer be traded in their primary states. Nigeria's new industrial development strategy, the cluster concept, was not entirely different in policy because there has been a promotion of industrial estate by the government. It was a policy of refocusing of the country's implementation strategy to achieve a quick take off and survival of Nigerian Industrial Enterprise. According to the policy "the cluster concept would operate on five planks; free trade zones, industrial parks; industrial clusters; enterprises Zone; and incubators. The cluster was to be based on Public-Private Partnership

(PPP) so government was expected to identify and locate the clusters, provide infrastructure and incentives, while the private sector is expected to locate their business within the clusters (Obikili, 2014).

INDUSTRIAL CLUSTERS IN THE NIGERIAN BUILT ENVIRONMENT

Poverty alleviation remains a major weapon for combating the activities that cause environmental degradation and industrialisation represents a driver to curb poverty, however the industries are worst affected by difficult business and physical environment and uncontrolled activities of industrial clusters cause environmental problems which degrade the environment in short and long term basis. Amakom (2006) rightly posits that Nigeria remains an extremely challenging environment for private investment, and further pointed out three fundamental problems that have besieged both foreign and domestic businesses; weakness in infrastructure provision, lack of personal and property security and poor governance characterised by corrupt practices. The free trade zones (FTZ) and export processing zones (EPZ) established at various centres in Nigeria have not assumed the status of being global competitors. Pockets of industrial clusters that have through Public-Private Partnership developed over the years have not moved from the infant industry status. Many industries located at Kano which is the centre stage for tanneries have closed due to incessant power. The commercial city of Aba which hosts pockets of industrial clusters has experienced an exodus of industries owing to insecurity and poor infrastructure (Transportation and Electricity). Lagos, Onitsha, Nnewi and Enugu continue to enjoy international and local patronage due partly to sustained efforts of all participating actors to enhance the business environment and factors affecting them.

CONCLUSION

The rapid population growth and uncontrolled urban drift are root causes of decay of the built environment which is seen in uncontrolled and unplanned urbanisation, consequently the clusters of industries that spring up unplanned and uncontrolled become agents of environmental degradation and are not capable of long term sustenance. The general poor operational state of industrial clusters in Nigeria will continue to impact on poverty indices and consequently, pressures mounted on the host environment are likely to degrade it even more. Sustainable industrial development can be achieved through adequate policy initiatives that must emphasise the local content. Strict adherence to land use zoning patterns which will include preventing industries from being sited close to ecologically sensitive areas, residential areas and tourist

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attractions and the production of comprehensive industrial master plans with emphasis on environmental conservation will ensure that the environment is protected alongside poverty reduction benefits of these clusters. Nigeria is blest with natural and human resources which are poverty reduction drivers. Nigeria is also blest with intellectually articulate minds that can proffer solutions of policies and practical answers aimed at revamping or kick-starting any aspect of collapse in the economy. Nigeria must rise above ethnic sentiments and imbibe a cultural matrix of religious tolerance, respect for diverse cultures and above all fight the endemic corruption that has voraciously devoured the entire nation.

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