

## Rural revitalization a Pathway to Rural Development in Nigeria

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**Abstract:** The research paper examines rural development in Nigeria with emphasis on Rural revitalization strategy, green development, pollution, institutions, agencies, and policies employed to bring about the much-needed rural development in the country. Using china's rural revitalization strategy as a base, the paper has however drawn conclusions on the best pathways to Nigeria's rural development. Due to China's tremendous successes in its strategy and policies, the paper selected the Niger delta region states in Nigeria, because they best fit the analogy. The paper has further examined the impacts of the various efforts made by both the domestic and foreign governments and international organizations, institutions, agencies, and non-governmental organizations to bring about real development at the grassroots level. In an attempt to do this, clarification of concepts like Green development, Ecological resources, and rural development was carried out, which formed the theoretical basis of the analysis. It was found out that efforts made by the Nigerian government through several strategies like the nation's development plans from the colonial era to date which were ex-rayed did not bring about meaningful development. Similarly, international organizations and regional strategies have not led to any significant improvement in the living conditions of the rural dwellers and rural development in general. In this paper, the study used The Two-mountain Theory as a pathway to the realization of rural revitalization and development in Nigeria. Which has served the Chinese people's aspiration for a better future. As pointed out by President of China Xi, the environment is people's livelihood, and blue sky and lush mountains are also happiness. Environmental protection is an important livelihood project, it's also the important foundation for people to strive for a better life.

**Keywords:** Rural Development Rural Revitalization Pathways Green Development Ecological resourcespollution

### I. Introduction

Nigeria's current emphasis on rural development by the federal, state, and local governments of the country is currently in order. However, this is because rural communities are the most important sector of the Nigerian, economy. Agriculture and rural developments are the most crucial for the structural transformation and economic development of Nigeria. In Nigeria, the rural population represents an average of over 60 percent of the total population of Nigeria. While 90 percent of the rural labor force engaged directly or indirectly in agricultural and rural development which can contribute to greater efficiency, increased household income, improved standards of living, and poverty reduction. However, it can be said that Nigeria's countryside has not been deliberately neglected by the previous administration of the country in their development planning efforts and programs. From 1974 to the present times, agricultural development has remained the key principal component of Nigeria rural development has remained the principal component of the country's rural development strategy. This is because of the role agriculture plays in the economic growth and development of many economies, especially the developing ones. Although agriculture contributes 42 percent of Nigeria's GDP and creates employment and a source of livelihood for more than 60% of the productivity engaged population, it however receives less than 10 percent of the annual budgetary allocations. However, This has led to the current crisis of food production and food insecurity in Nigeria making the country depend so much on imported food. Compounding the issues is the seemingly unresolvable incoherence in Nigeria's government policy formulation and implementation strategies. therefore, achieving food security in its totality has continued to be a challenge to developing countries like Nigeria. Since 1960 after independence, every administration has made efforts to achieve food security in the country. Also after independence Nigeria depended on agriculture to provide infrastructure and services until the collapse of the first republic and before the military takeover of government in 1966. From then on the government introduced the National Food Operation Programmes and the Nigeria agricultural and cooperative bank was established to fund agriculture and assist farmers. This was however followed by Operation Feed the nation in 1976. The policy was fashioned to revolutionize the agricultural sector

of the Nigerian economy which at that time was derailing from its purpose and contribution to the economy. However, in order to make the program effective, farmers most especially in the rural areas were educated on farming practices and agriculture was made mandatory in secondary schools. Over time, eleven River basin Development Authorities (RBDA) were founded to develop irrigation agriculture programs in an attempt to expand farmland. Thereafter farm settlements were established for cash and food crops to reduce food importation. However, Nigeria's effort between 1981 and 1985 yielded positive fruit as the contribution of agriculture to GDP, therefore rose from 21.1% to 35.4%. This was a result of the Green Revolution Programme of Late Alhaji Shehu Shagari's administration which complemented the R.B.D.A program. However, The Military Government of General Ibrahim Babangida 1986 facilitated the rural infrastructural development program and established the directorate of food, roads, and rural infrastructure (DFRRI). The program was however designed to open up the rural areas for effective agricultural activities and boost food production. Then, President Olusegun Obasanjo, the new democratic president introduced many policies and programs designed to address the problem of food insecurity in the country. However, there has been a positive impact on agricultural production and consequent improvement in the country's GDP.

**i. Statement of the problem**

Rural development has been a general and tedious problem that is affecting many countries all over the world. However, various policies and programs have been taken in Nigeria in order to improve the problems of the rural dwellers. But so far, such policies and programs have ended up with the Government that introduced them. Also, various agricultural policies and programs, which differed in nomenclature and perhaps, organizational structure and advisory procedures, have been implemented in Nigeria, yet, the country is still striving to afford its rural citizens a better life. In the rural development context, increasing the capacity of the poor households to purchase food without better living conditions, improvement of infrastructure, rural revitalization, and job creation in addition to what they might be able to grow, will only introduce more complex problems for future generations.

**II. Literature Review**

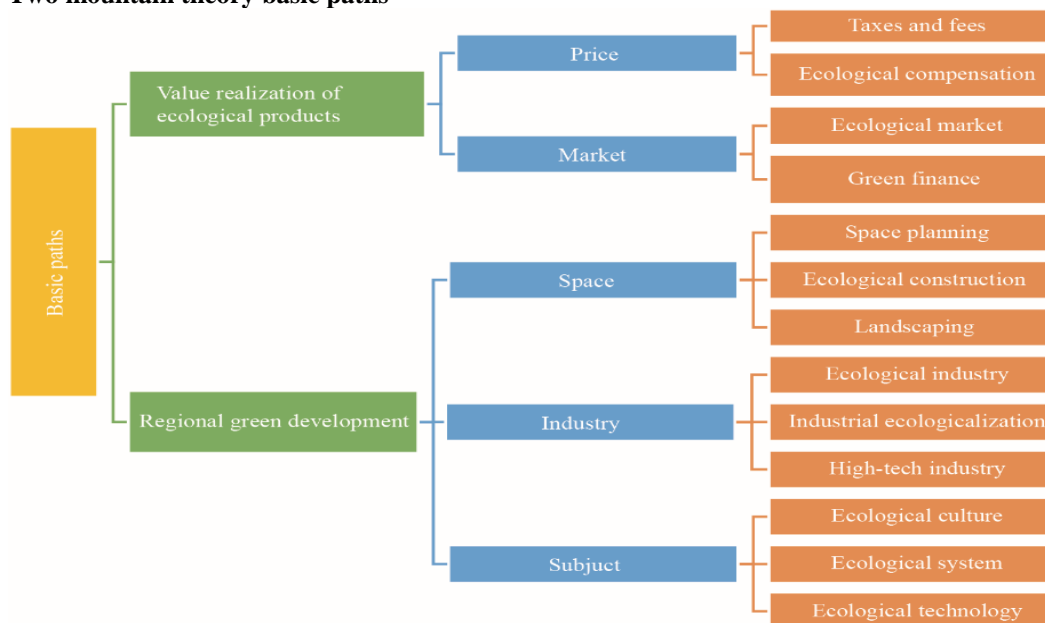
The rural-urban divide has always been a challenge in Nigeria as it is in countries across the world. According to the World Bank, in 1960 85% of Nigerians lived in rural areas. However, today less than 50% do. Understandably, the narrative of rural areas does not easily feature in the national discourse which is overwhelmingly metropolitan. Also, rural areas are not necessarily the focus of governance, and state institutions are often ignored by it. However, the divide between rural and urban areas in Nigeria requires a greater focus from the government. Aside from improving rural dwellers' lives, Rural revitalization is also a way of positively transforming rural areas for present and future generations, as described in Rurbanomics signature chapter co-authored with UNDP. Rurbanomics is however an approach to revitalization which aligns rural economies as equal partners with urban economies, specifically emphasizing the vitality of rural economies. Thus, Forging links between rural and urban economies, not only with mega-cities but also with smaller towns and cities, tend to play a major role in revitalization, especially in improving employment opportunities boosting rural incomes and rural-urban market links that can provide both urban and rural populations with healthy diets. However, Rural revitalization requires investments in Agricultural and non Agricultural sectors, information and communication technologies, rural education, rural governance, rural health, and a healthy environment. Thus These building blocks tend to create vibrant rural areas that attract and retain employed, educated, and healthy rural residents. However, because most poor people continue to live, work, study, access services, and create dwellings in rural areas, rural revitalization tends to hold the key to accelerating the progress of Sustainable Development Goals. In recent times, rural populations have accounted for 45.3 percent of the world's total population and 70 percent of the world's extremely poor. Thus, rural populations remain the world's most vulnerable and marginalized. However rural context makes this persistent poverty nearly inevitable. Rural areas suffer most from rapid population growth rates, less job access, and enterprise creation, inadequate infrastructure, insufficient financial services, and limited access to social services, and are affected mostly by climate change impacts. However, without innovative and holistic rural revitalization approaches that leverage new opportunities and address growing challenges will be difficult perhaps even likely impossible. Revitalizing rural areas can however tap into the potential of growing urban demand and a neglected rural labor force in stimulating a broad-based economic growth in both rural and urban areas, and develop a driving force in reducing poverty, eliminating hunger and malnutrition, and improving rural livelihoods. When however addressing the growing challenges of urban food security and nutrition it is important to reshape agricultural value-added food systems to make them healthy, safe, and sustainable and to support rural revitalization. Government, Public policies, and investment tend to support increased agricultural productivity, diversification of agricultural production, and development of agricultural food value chains that can create better rural jobs and improve nutrition and rural well-being. For example, research studies from India and China have found that government investments in agricultural research, rural education, and rural roads are extremely effective in

eliminating poverty. However, in Nepal increase in road density and quality has been seen to lead to improvements in nutrition outcomes for children. Rural revitalization can also create decent living and working spaces for rural dwellers. However, government investment in high-quality educational and social services can make rural areas powerhouses for economic growth and better living spaces. Revitalizing rural areas can also proffer solutions to rising rural-urban migration, increasingly congested cities, a rapidly growing population of unemployed youth, and worsening environmental degradation. Also, previous research has found that the construction of village service circles with villages as The main core concept helps to accelerate the development of urban and rural integration (Lozada et al., 2018; Watmough et al., 2016, pp. 188–203; Xia et al., 2019). In previous research, there were compared numerous areas at different stages of industrialization that kind of revealed an evolution in the functioning of rural housing due to industrialization (Jiang et al., 2016; Lai & Zhang, 2016; Ma et al., 2018; Shin & Chae, 2018).

### III. Methodology and Theoretical framework

The methodology used in this paper is a combination of the qualitative data, especially secondary and primary sources including an observation of the situation in oil-producing states namely Akwa Ibom, Bayelsa, Cross River, Delta, Edo, Rivers, extended Niger Delta including Abia Imo, and Ondo, and also the use of the Nigeria Watch database which identifies the sources, maps and the trends. The research paper also combined the observation method with key informant interviews with some Niger Delta youths with the aim of investigating the context and nature of rural communities in the region especially as it concerns rural development. In this paper, an analysis of various indicators of rural development was employed, including surveys, statistical data from government websites, and the two mountain theory model. The Two mountain theory model of rural Revitalization" has been adopted as it fits into the theoretical framework of this study. The model was pro-founded by The president of China Xi Jinping when visiting Yucun, a village in Anji county of Zhejiang province. President Xi, who is also general secretary of the Communist Party of China Central Committee and chairman of the Central Military Commission, has said protecting the mountains and waters well will provide special advantages for the further development of the village, adding that the economy should not be developed at the cost of destroying the environment.

#### Two mountain theory basic paths

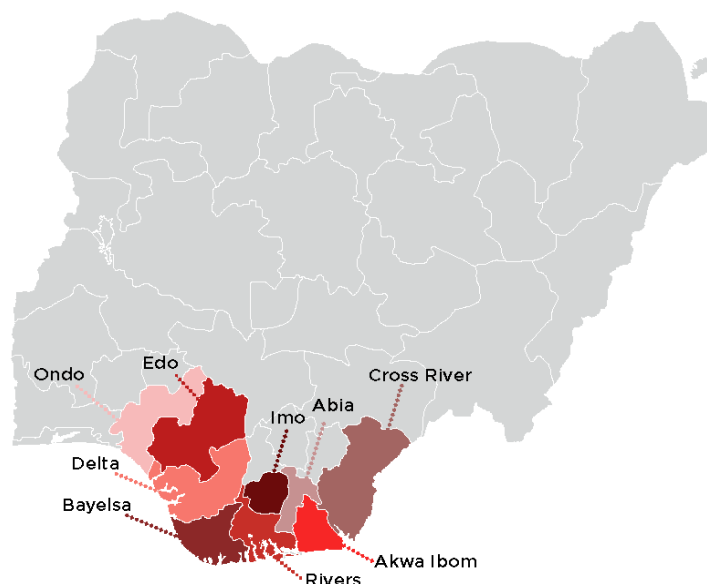


### IV. Origin of the ‘Two mountain theory’ and success story

The president of China Xi Jinping, who is also general secretary of the Communist Party of China Central Committee and chairman of the Central Military Commission. The president of china pro-founded the theory and proposed that protecting the mountains and waters well will provide special advantages for the further development of the village, adding that the economy should not be developed at the cost of destroying the environment. China’s President Xi Jinping also proposed and in quote "Clearwater and green mountains are gold and silver mountains president "Xi said during an inspection tour in Yu Village, Anji County, Zhejiang Province on March 30, 2020. This however has helped china in building a modern socialist country including both the modernization of urban and rural areas. The goal of building a moderately prosperous society in all

respects has been the Chinese government's plans and efforts in promoting rural development in all respects including building more beautiful villages. Known as the birthplace of the "Two Mountains" Theory - lucid waters and lush mountains are invaluable assets - Anji, a mountainous county in East China's Zhejiang province, has been striving to tap new way to achieve sustainable and high-quality development while keeping the environment green. However, The county is located in Huzhou of Zhejiang province. Recently it was approved as a pilot zone for the successful implementation of the concept theory by provincial authorities with ecology being at the forefront. Also, the province aims to build the county into a national sample of both green development and integrated development of urban and rural areas by 2022. On Nov 20, 2017, a meeting of the Central Leading Group for Deepening Overall Reform presided by Xi passed a three-year action plan for improving the rural living environment in China. According to the plan, it was reported that the country aims to make remarkable improvements in rural areas by 2020. Villages should be clean and tidy, and villagers should have enhanced hygiene and health awareness. As early as 2001, the county of Anji has followed an ecology-oriented development path instead of the previous one that depended on resource consumption. Since then, the county has held fast to environmental protection. In the process of matching its ecological advantages to the forces of development, Anji is bent on green development by greatly promoting environmentally friendly industries like eco-agriculture and tourism. In 2018, the GDP in Anji reached 40.4 billion yuan (\$5.7 billion), up 8.3% year on year. The general fiscal revenue hit 8 billion yuan, a year-on-year growth of 19%. Last year, Anji received over 25 million tourist visits from home and abroad, generating revenue of 32.5 billion yuan. The value-added of the tourism industry accounted for 13.5% of the total GDP (statistical yearbook). Furthermore, through the building of beautiful villages, Anji county has successfully explored a way for the harmonious development of the economy and ecology, rural and urban areas, farmers and urban residents, agriculture and other industries."High-quality green development has been the main theme of the construction of the pilot zone and a great opportunity. The county has continued to explore effective ways to carry forward the "Two Mountains" Theory and innovate mechanisms and systems for higher efficiency. A comprehensive and whole-process management has however been employed in building the pilot zone, re-enforcing the improvement of the quality and stability of the local ecosystem. However, in the latest update 20 projects related to policy, capital and technology have however being mapped out for a detailed plan of action to support Anji's green development.

**i. Map of Study Area Nigeria, Niger Delta**



The Niger Delta is a large land area in southern Nigeria. It has a population of around 32 million people, of which most are rural dwellers. Despite its large wealth and natural resources, poverty and literacy are still very high. The core states are Rivers, Bayelsa, and Delta, where most of the research is focused, with some activities in the surrounding states of Akwa Ibom, Cross River, and Edo. However, Sometimes the states of Abia, Imo, and Ondo are also included in the definition of the Niger Delta region. The Niger Delta is however bio-diverse, with its mangroves providing carbon sequestration capacity and support to a wide variety of plant and animal life, and also as well as agriculture and fishing on which many in the region rely for their livelihoods. The Niger Delta is one of the world's largest wetlands and includes by far the largest mangrove

forest in Africa. Within this extremely valuable ecosystem, oil activities are widespread - Rivers State and Delta State produce 75 percent of Nigeria's petroleum, which represents over 50 percent of national government revenues. However, despite its vast oil reserves, the region remains poor. Gross National product (GNP) per capita is below the national average of US\$280.

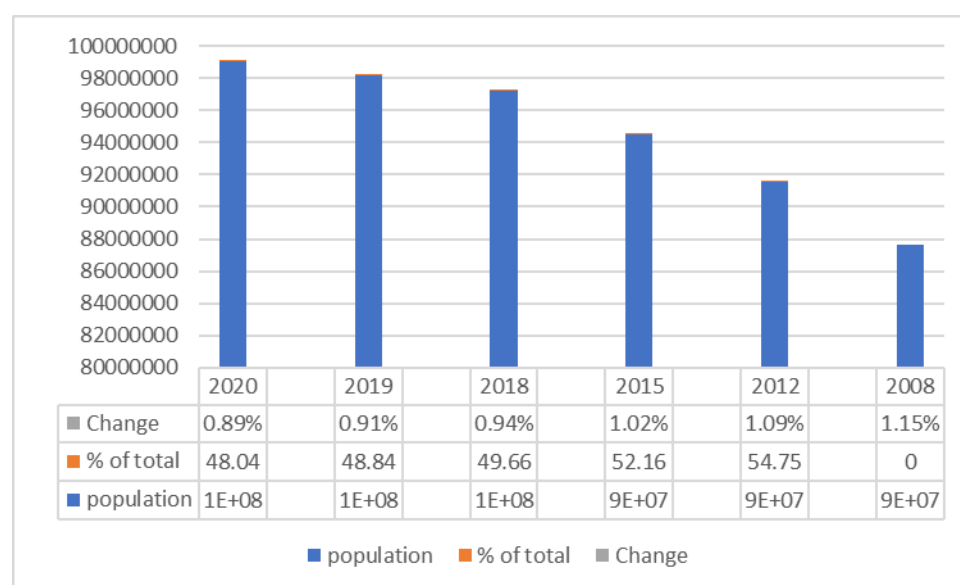
**General Stats. TABLE 1**

<b>9 States 185 LGAS</b>	South south zone: Akwa ibom, Bayelsa, Cross River, Delta, Edo, Rivers Extended Niger Delta includes: Abia Imo, and Ondo - all oil producing states
<b>Population</b>	40 million (22% of total Nigeria Population) 2/3 under 30 years of age
<b>Population Density</b>	265 people per km <sup>2</sup> 13,329 Settlements, 94% with < 5000 Population
<b>Ethnic groups/Languages</b>	<b>40</b> main ethnic groups; around 120 mutually unintelligible languages and dialects
<b>Land Areas</b>	112000 km <sup>2</sup> of land area is oil affected; core delta is 75000km <sup>2</sup>
<b>Ecological Zones</b>	Coastal barrier sandy ridge, mangrove swamp, freshwater swamp lowland rainforest
<b>Natural Resources</b>	Petroleum, natural gas, tin, lead, coal, zinc, arable land

**Table 2: Nigeria Rural Population- Historical Data partial Years**

Year	population	% of total	Change
<b>2020</b>	<b>99033580</b>	<b>48.04</b>	<b>0.89%</b>
<b>2019</b>	<b>98156653</b>	<b>48.84</b>	<b>0.91%</b>
<b>2018</b>	<b>97263534</b>	<b>49.66</b>	<b>0.94%</b>
<b>2015</b>	<b>94484919</b>	<b>52.16</b>	<b>1.02%</b>
<b>2012</b>	<b>91564459</b>	<b>54.75</b>	<b>1.09%</b>
<b>2008</b>	<b>87604184</b>	<b>58.30</b>	<b>1.15%</b>

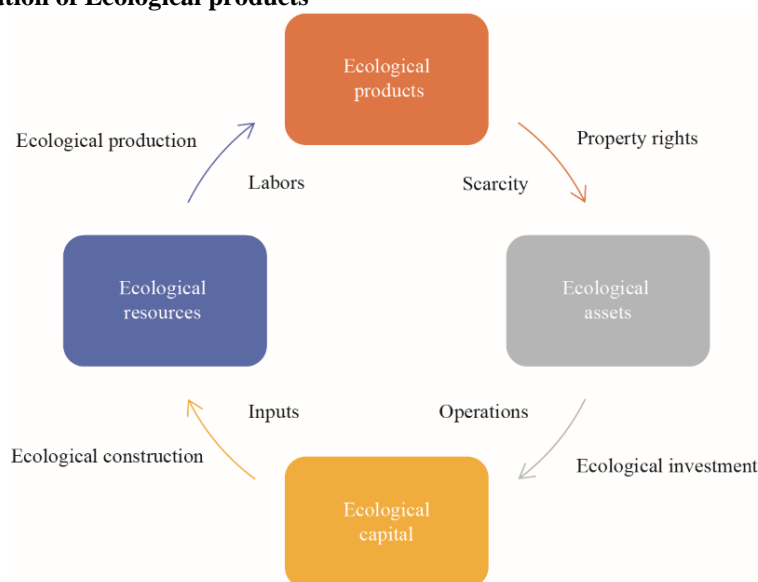
**Graph 1 Nigeria rural population partial years**



**i. Value realization of the ecological products**

Ecological products in this case study are Niger delta natural products, such as fresh air, clean water, growing forests, and a suitable climate, which appear to bear no direct relationship with human labor. They have the functions of maintaining ecological security, ensuring ecological regulation, and providing a good living environment. However, Wetlands play essential ecological, social, and economic roles. Niger delta wetland has the tendency to break down and assimilate pollutants. Although the wetland resources are essential for rural dwellers because it is a source of fuelwood, timbers, used for art and construction works, it is also a breeding ground for wildlife, nestling arena for migratory birds, spawning place for different fish species, and source of plants with insecticidal and antimicrobial properties. The region has been widely known as an area of endemic species of biodiversity including plants, mammals, birds, reptiles, and amphibians. The Niger Delta ecosystem's forest products include food, fuelwood, and protein sources; crabs, crayfish, fishes, prawns, periwinkles, snails, and other raw materials. However, some of the biodiversity including plants and animal are known to have some medicinal uses. This is because history has it that fats, oil, and the skin of some animals are used in treating certain diseases in humans in addition to their food purposes. Several plants found in the Niger Delta region have been widely reported to have medicinal purposes. Also, it has been reported that Niger Delta mangroves have social values including therapeutic, amenity, spiritual, heritage, and existence values.

**Fig 1. Value realization of Ecological products**



However, these ecological products can provide services in a certain geographical space; integrity, that is, provide consumption space and develop leisure, entertainment, construction, and other associated functions; immeasurable consumption, such as fresh air and clear blue sky. In order to realize the value of ecological products in the Niger Delta region, their production should be promoted via pricing and trading. In fact, the price of ecological products should be the monetary value that corresponds to the physical value. However, using money to measure resource consumption, ecological cost, and ecological contribution will help Niger Delta rural communities to correctly understand the cost of a decrease in resources and environmental damage, along with the benefits of ecological protection.

**Table 3 Identification of ecological asset and Resources of Niger Delta States**

States	Population	Ecological Assets and Resources	Area Km <sup>2</sup>	Industry
Cross River	5450758	Ibendo Beach, Mangrove Forests.	7,081 km <sup>2</sup>	Crude Oil and Natural gas.
Akwa Ibom	3737517	Obudu Mountain Forests.	20,156 km <sup>2</sup>	Tourism, Crude Oil and Natural gas.
Delta	5663400	Swamp Forest, Rivers.	17,698 km <sup>2</sup>	Crude Oil and Natural gas.



Edo	3233366	Fresh water vegetation, rivers.	17802 km <sup>2</sup>	Crude Oil and Natural gas.
Rivers	5198716	Tropical rain forest, Mangrove Swamps, finima nature parks, Wetlands.	11,077 km <sup>2</sup>	Crude Oil and Natural gas.
Bayelsa	1704515	Edumanom forest Reserve, Mangrove forest, Rainforest, Riverine, Estuarine.	10,773 km <sup>2</sup>	Crude Oil and Natural gas
Ondo	3460877	Forest, Mangrove Swamp, Ikogosi warm and cold spring.	15500 km <sup>2</sup>	Mining Crude Oil and Natural gas.
Imo	4928012	Swamp Forest, Beach Resort, Rivers.	5,530 km <sup>2</sup>	Mining, Crude Oil and Natural gas.

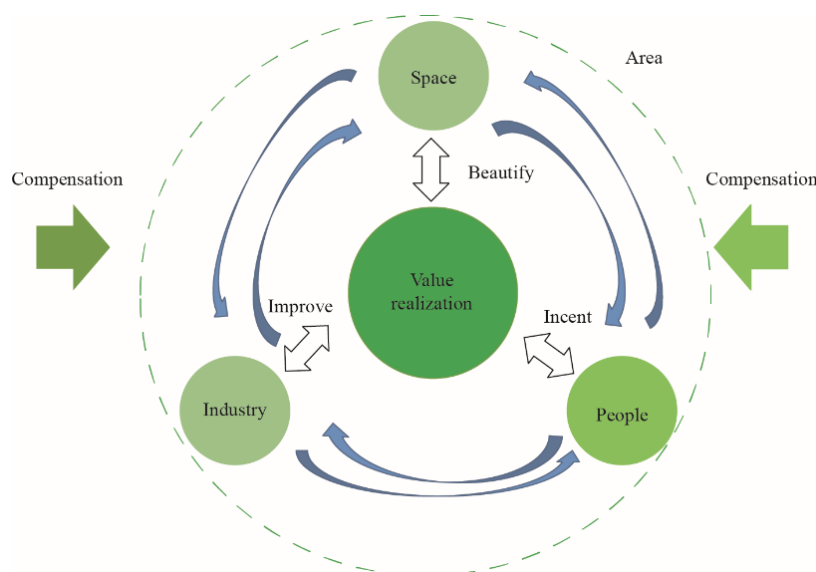
### ii. Solution to solving Value realization of the ecological products in the Niger Delta

In solving the above problems using the Traditional theory, it lies within guiding and regulating the ecological behavior of economic subjects, which has been divided into four links: ecological resources ecological products, ecological assets, and ecological capital. In this study, the first step was to identify the key ecological production factors. The value of ecological products is derived from ecological production and human labor, and their non-substitution and economic scarcity. These however are the prerequisites for their value generation. Thereafter an efficient market should be the next step which is necessary for internalizing the externalities of ecological products, which also depends on the correct and complete reflection of all information related to price; the effectiveness and legitimacy of the assets should be the basis for the assets to become capital. Sustainable cash flow is necessary to maintain and increase value.

### iii. Regional green development

According to the two mountain theory, the growth of a Rural regional economy depends on the main driving factors such as capital, technology, human resources, and institutions. Ecology and resources have spatial properties, and green growth depends on the conditions of industrial development. Green development has multidimensional values, which are divided into three dimensions: (1) Economic benefits, which should be reflected in Nigeria's GDP growth, collective assets, income, etc.; (2) ecological benefits, including positive growth of ecological assets, environmental improvement, resource efficiency, carbon balance, etc.; (3) social benefits, including zero waste, increasing residents' satisfaction and employment, etc. The economic, social, and ecological benefits should however be in harmony; if however, the three are in conflict, ecological and social benefits has to be given priority. However environmental improvement has been a main issue in the Niger delta, due to the Niger delta carbon emission and its CO<sub>2</sub> contribution to the pollution of the atmosphere, the adverse effects of climate change are being felt in Nigeria, especially when it comes to agriculture and food security; biodiversity and ecosystems; water resources; human health; human settlements and migration patterns, and energy, transport, and industry. Women are more vulnerable to the effects of climate change than men because primarily as they constitute the majority of the poor and are more dependent on natural resources, have unequal access to resources, and are not included in decision-making processes. Air pollution has been identified as one of the most critical environmental problems confronting the Niger Delta Area. Traffic, industry, and gas flaring are the major air pollution sources in the region. Impact on socio-economic, ecosystems health, properties, and climate have been linked with the pollution episodes in the area but this requires substantial scientific and empirical evidence. Multiple factors especially the lack of equipment, inadequate skilled personnel, and poor policy framework have militated against effective and qualitative air quality studies in the area. To achieve long-term goals for the region in this regard that would lead to the overall benefit of the people in the area, there is a need therefore to employ a holistic and integrated approach to air pollution management that will involve all the stakeholders.

**Fig 2. The internal logic of regional green development**



#### **iv. Externalities of Basic paths of the Two mountain Theory**

Solving the externalities in the process of pricing and marketization of ecological products in the Niger Delta, the basic approaches according to the theory are ecological tax, market and compensation, and green finance. Ecological taxes and fees internalize the externality of ecological products by a way of Pigovian tax, and the ecological market internalizes the externalities of ecological products by defining and trading property rights. Ecological compensation internalizes the externalities of ecological products by means of economic incentives/subsidies; and green finance realizes the inter-temporal and transregional value exchange by designing the charging mechanism agreed upon by both suppliers and consumers, thus internalizing the externality of ecological products.

#### **v. Ecological taxes and fees**

Ecological taxes and fees include environmental taxes and resource fees.

According to the Two mountain theory, there should a tax on pollution sources. However, environmental taxes commonly internalize the social costs of environmental pollution and ecological destruction into production costs and market prices, which will allocate environmental resources through market mechanisms. Like China, the country levied an environmental tax in January 2018. Japan, Sweden, and Costa Rica also have carbon taxes on the use of fossil fuels, reflecting the value of carbon sinks. Resource fees should be subdivided into resource use and paid service fees, and economic compensation. Resource use fees according to the traditional theory embody the concept of paid use of resources, including land use right grant fees, water resource fees, and so on. Paid service fees refer to purchasing management services of the resources and environmental damage or adverse effect, including channel cost of maintenance, marine waste dumping fees, compensation for the use of new land for construction, and fees for land disposal, land reclamation, effluent discharge, forestry protection, wildlife resources protection, new plant varieties protection, sewage disposal, water loss and soil erosion control, and afforestation. Economic compensation in this context refers to the compensation paid to the resource owner for the possession or consumption of resources and links by resource developers and users. However, the implementation of the economic compensation system in the Niger Delta and Nigeria, in general, is conducive to curbing the misuse of resources, helps reflect their scarcity, and maximizing the use of resources, and this is one of the more effective means to regulate its use. Economic compensation includes farmland occupation tax, seedling subsidy, land expropriation compensation, and mineral and water resources compensation. E.t.c

#### **vi. Ecological compensation**

Although In China, the government occasionally purchases ecological products on behalf of the public in a certain region or sometimes the whole country if necessary. This can however be replicated in the Niger Delta Region and Nigeria in general. However, according to the theory, There are two modes of ecological compensation: vertical and horizontal. The former refers to the mode of compensation from the upper-level government to the lower-level government or farmers. The latter refers to the financial transfer payment mode between parallel governments. If the upstream protects the ecosystem of the basin and provides clean and stable water flow for the downstream, the downstream governments in this case Niger Delta should offer compensation to the upstream governments.



#### **vii. Ecological market**

The existing commodity market can be used by changing the planting and production mode of such commodities as green food and environmentally friendly wood, the value of green ecology, environmental protection, and health will be more endowed on the intrinsic value of commodities. However, green labeling of commodities can in such a way contribute to increasing commodity prices, where consumers can tend to pay directly for environmental services, and feedback incentives for green ecological planting and production methods indirectly can also be achieved. The use of the existing property market can be used to coordinate and reflect the interests and responsibilities of all parties involved, such as water, emission, and energy rights trading, through the existing resource property rights trading market and the negotiated price mechanism. Also, the Niger Delta region can take advantage of the existing financial/capital markets. The use of green bonds, green funds, public-private partnership (PPP) funds, and other green financial means to achieve market-oriented financing of the supply of ecological products for a good development prospect. Lastly, creation of new markets with the support of laws and regulations, a national unified carbon emission trading market can be established on the basis of the existing partial, decentralized, and individual carbon emission trading market, gradually developing from a single field to a multi-field trading market-oriented system.

#### **viii. Green finance**

However, for financial management activities, attention should not just be paid to protecting the ecological environment and controlling environmental pollution, but also provide sustainable financial support for the construction of ecological civilization by guiding capital flow to the supply and demand sides of ecological products. This includes environmental finance and taxation policies in the form of green credit, securities, bonds, insurance, funds, PPP project financing, PPP funds, etc.

During the process of value realization, it is important to define and manage the boundary between government and the market. However, China's ecological product value mainly depends on the government's dominant ecological compensation system. Along with further expansion for future ecological compensation, the Niger delta should not suffice to rely on the government alone to solve the sharp contradiction between economic development and ecological construction. This is because the Government purchasing ecological compensation will lead to greater financial pressure and the market system may have higher transaction costs. In general, ecological compensation is suitable for a large dispersion compensation subject, where property rights are not clear. The market approach is appropriate in cases of small-scale compensation subjects with clearly defined property rights. However, the Nigeria Government-led ecological compensation could also adopt market-oriented means to improve efficiency.

**Table 4 Nigeria Carbon (CO<sub>2</sub>) Emissions partial years**

<b>Year</b>	<b>Kilotons of Co2</b>	<b>Metric Tons Per Capita</b>
2007	90,130.00	0.67
2010	90,730.00	0.57
2013	110,720.00	0.64
2016	108,420.00	0.58
2017	112,920.00	0.59
2018	130,670.00	0.67

**Source:UNFCCC. International data base 2021**

Niger Delta region is one of the major contributors of air pollution and greenhouse gasses to the atmosphere in Nigeria. Air Pollution results from the presence of one or more contaminants or pollutants in the atmosphere in a quantity above the bearable limits over a long period of time causing harm to man, animals, plants and other materials exposed in the environment (Ukpere et al., 2018). Air pollution could come into a system through natural (earthquakes, volcanic eruptions, etc) or anthropogenic or man-made sources (gas flaring, bush burning, etc). In the Niger Delta region, virtually all forms of pollution and the ecological destruction of the region are through man-made sources (Bodo, 2019). Approximately Eight billion cubic meters of gas is flared every year at different oil production sites in the Niger Delta region (NOAA/GGFR satellite data). The flaring of natural gas from different oil production sites has produced air pollutants such as particulate matter (PM), ozone (O<sub>3</sub>), nitrogen oxides (NO<sub>x</sub>), volatile organic compounds (VOC), and sulfur dioxide (SO<sub>2</sub>) and metals (Anejionu et al., 2015). However, These pollutants have been reported to have negative impacts on the environment. In various scientific research, exposure to high doses of air pollutants has been linked to

respiratory problems, cerebrovascular disease, ischaemic heart disease, lung cancer, and chronic obstructive pulmonary disease (Pope et al., 1995; Pope et al., 2002; Burnett et al., 2014; Ghude et al., 2016). Furthermore, in earlier research findings it was established that higher concentrations of air pollutants could have detrimental effects on crops (e.g., Heck et al., 1983; Dung et al., 2008; De Bock et al., 2011). For instance, Dung et al. (2008) research findings found that air pollutants stemming from gas flaring affect crop productivity as well as nutritional quality in the Niger Delta. In addition, air pollution has been reported to affect natural vegetation, which reduces biodiversity (Lovett et al., 2009; Ugochukwu and Ertel 2008). However, as a result of the inhomogeneous spatial distributions of air pollutants, changes in their emissions and concentration levels could have significant local climate impacts (Chen et al., 2007; Shindell et al., 2012). Further to this, gas flaring contributes to climate change by releasing millions of tons of CO<sub>2</sub> and Black Carbon (BC) into the atmosphere (World Bank, 2017; Okeagu et al. 2006). Gas flaring releases metals and other pollutants into the environment that have been seen to cause a variety of environmental problems. Other associated environmental problems apart from those mentioned above include wet and dry deposition of acid and acidic particles that lead to corrosion of metal roofs, and harm to aquatic species and soil micro-organisms. For Niger Delta to be able to implement the regional green development, pollution needs to be greatly reduced.

Pollutant	Niger Delta area oil communities	Cities	FEPA Standards
TSP $\mu\text{m}^3$	92.2 - 348.5	396.8 - 583.3	250
NOX(ppm)	22.0 - 295.0	35 - 370	40 - 60
SO <sub>2</sub> (ppm)	7.0 - 97.0	16 - 300	100
CO(ppm)	5.0 - 61.0	1.0 - 52	10
CO/NO <sub>x</sub> (ppm)	20	15 - 130	-

#### **Solution to solvingRegional green development in the Niger delta**

Regional green development, however lies in the positive relationship between value realization of ecological products, space, industry and subject. The positive cycle of transformation,feedback, Space planning, ecological construction, and environmental beautification all contribute to shaping quality space by attracting people to quality space and promoting industrial development with the help of main bodies to accelerate industrial transformation and attract industrial investment. This can however only be achieved by means that promote regional green development of industry, thus improve strength, quality of life, and image in the region, re-enforce the agglomeration of talent, capital, and industries, also nurture the ecology and achieve sustainable green growth. The realization of the value of ecological products is the internal driving force of the interaction between ecology and space, industry and rural dwellers.

**Table 4 selected Indicators for development growth Nigeria in partial years**

Indicators	2016	2017	2018	2019	2020
<b>GDP</b>	<b>2176.0</b>	<b>1968.6</b>	<b>2027.8</b>	<b>2.229.9</b>	<b>2097.1</b>
<b>Health Care Spending/ Per capita (\$)</b>	<b>79</b>	<b>74</b>	<b>84</b>	<b>81</b>	<b>85</b>
<b>Electricity Access (%)/ population</b>	<b>59.30</b>	<b>54.40</b>	<b>56.50</b>	<b>55.40</b>	

**Source: Worldbank Database**

In Nigeria Fiscal Expenditure which is an important indicator of growth and development has averaged 1544.91 NGN Billion from 2010 until 2021, reaching an all-time high of 3165.23 NGN billion in the second quarter of 2021 and a record low of 743.65 NGN Billion in the first quarter of 2011. In the 3rd quarter of 2021 from 3165.23 NGN Billion in the second quarter of 2021. For Nigeria to improve its citizens' lives especially rural citizens both in the Niger Delta region and Nigerians in general, certain investments need to be made by Investing in ICTs: Investments in ICTs however offer a promising means to address unequal access to market information and enable rural and urban markets to work in synergy. The possibilities in ICTs are endless, from the transmission of information on agricultural extension and market prices via cell phones to mobile banking. Also, Complementary investments in input markets and financial services will ensure that markets function

efficiently and equitably. ICTs help in Promoting small and medium rural enterprises that use new technologies, which have a differential impact on youth, given their capacity to use ICTs. Also, Investments in education are critical to providing rural people with knowledge and skills to improve their livelihoods. Investments include, firstly, improving primary and secondary education. However, better education systems have been reported to have a strong positive impact on many indicators of human development, including income, labor productivity, nutrition, health status, and family planning. . Rural entrepreneurs, particularly in the Niger delta, tend to engage in easy-to-enter activities such as sales and trade rather than professional services. Start-up costs have however been one factor in their decision, but education also represents a major barrier to accessing other industries. Using education to catalyze rural revitalization however calls for vocational and professional training initiatives, as well as entrepreneurial development tailored to local short- and long-term economic opportunities. The enhancement of rural education systems and matching training to local needs and opportunities can also ensure that educated youth do not leave for the city and help propel growth poles and corridors across rural areas. Investments in health services serve as a linchpin to improving labor productivity, nutrition, and quality of life for generations to come. Rural residents currently have a lower life expectancy and poorer health status than their urban peers in the Niger delta. Also, the Creation of rural health education systems which can help train health professionals appropriately for rural practice has great potential. Training nurses to carry out procedures traditionally reserved for physicians, for example, may help communities where nurses are the only health professionals available. However, there are other promising models for improving rural healthcare which include telemedicine and training community health volunteers on a large scale. For example, the community-based management of acute malnutrition performed in more than 60 countries, achieved a 90% recovery rate among patients. The Safe Motherhood Programme can offer a successful model for promoting rural maternal health in Africa.

**Table 5: Nigeria Literacy Rate Partial Years**

Year	Literacy Rate	Annual Change
2018	62.02%	10.94%
2008	51.08%	-19.12%
2006	70.20%	15.43%
2003	54.77%	-0.67%
1991	55.45%	-0.67%

Source: Worldbank Database

In Nigeria Literacy is however a basic necessity for day-to-day functions and for using new technologies, such as reading an SMS on the day's market prices. According to the world bank survey data site, the highest-yielding investments in education include increasing preschool enrollment (US\$33 benefit for every dollar spent) and primary school enrollment (US\$7 benefit) in Africa south of the Sahara, raising student test scores (US\$4 benefit), and ensuring secondary school completion (US\$4 benefit). Conventional educational systems, however, are insufficient to support and advance rural transformation. Rural entrepreneurs, particularly in Africa south of the Sahara, tend to engage in easy-to-enter activities such as sales and trade rather than professional services. Start-up costs are one factor in their decision, whereas education also represents a major barrier to accessing other industries. However, in using education to catalyze rural revitalization, it calls for vocational and professional training initiatives, as well as entrepreneurial development which should be tailored to local short- and long-term economic opportunities. Also, the enhancement of rural education systems and matching training to local needs and opportunities can ensure that educated youth do not leave for the city and can propel growth poles and corridors across rural areas.

**Table 6: Nigeria Poverty Rate and % change Partial Years**

Year	% under US \$5.50 per day	Change
2018	92.00%	-0.90%
2009	92.90%	-1.80%
2003	94.70%	1.40%

<b>1996</b>	<b>93.30%</b>	<b>0.00%</b>
<b>1992</b>	<b>93.30%</b>	<b>-0.90%</b>
<b>1985</b>	<b>94.20%</b>	<b>-0.90%</b>

**Source: Worldbank Database**

For Niger Delta to realize its rural development goals, there should be Investment in rural economies. The Strengthening and diversifying of rural economies should however be rooted in agriculture and beyond, and necessary steps toward revitalizing rural spaces. The quality of life of Niger delta rural residents however depends on good governance, including adequate provision of public goods and infrastructure and strong investment in education, health, and social protection. Increased investment in roads, electricity infrastructure, and communications in rural areas will better connect these areas to market opportunities and basic services. Also, linking rural and urban areas through good roads to transport not only high-value, perishable foods but also goods manufactured in rural areas is one example. This is because these links can stimulate rural enterprises, whether they are related to agriculture or not, and thus increase household income, reduce poverty, and improve access to other services such as education and health. In Bangladesh, as an example, improved rural roads were reported to have reduced extreme poverty by 3-6% and boosted secondary-school enrollment for both boys and girls. These services can however also be coupled with income-generation activities. The setting up of energy systems and associated infrastructure will equip rural zones with power for a range of economic activities. The cost of operating the systems can also be paid for from the resulting profits. However, there are necessary initiatives that propel rural economies, enhancing agricultural productivity (such as irrigation, improved seedlings, fertilizers, and post-harvest management) and increasing agricultural diversity as well as developing village enterprises. Although agricultural productivity sparks the growth of non-agricultural rural activities, additional investments in innovation, incubation centers, industrial parks, and special economic zones often help boost rural enterprise development. Incubation centers can provide shared infrastructure and training to start-up enterprises (and in the process, ensure that these enterprises follow best practices in terms of sustainability and production). Integrated industrial parks with modern infrastructure and services can attract private investment into rural areas. Special economic zones can spur whole industries by creating economic incentives, from duty-free imports and exports to tax breaks. The Chinese example of Township and Village Enterprises has shown the potential of promoting rural growth poles and corridors.

## **V. Discussions**

For Nigeria to meet the needs of the poorest and most vulnerable in the Niger Delta region, rural revitalization must begin now. Although different regions have different needs. In Nigeria, the focus will need to be on agricultural and rural development. The diversifying of the rural economy to expand rural employment and also stem migration should be a priority. Improving the rural environment and living conditions tend to attract young people back to their rural communities, though critical but eventually possible. China's set of evidence-based and achievable policies, programs, and research actions can advance rural revitalization when replicated in all these regions. However, the Adoption of Rurbanomics which is an approach for strengthening rural-urban linkages is also a viable option for the realization of rural development. The building and strengthening of a symbiotic relationship between rural and urban centers are key for improving agri-food system production, distribution, markets, services, and consumption and creating opportunities for rural labor. However, Rurbanomics offers an approach for engaging rural and urban areas not just megacities, but also small towns and cities in the development of nutrition-sensitive, environmentally sustainable, rural-urban value chains and the necessary infrastructure, markets, and skills. The effective integration of rural and urban economies, livelihoods, and services tends to benefit communities across the Rural-urban spectrum and transform agri-food systems to benefit rural areas. Globally, Agriculture remains an engine of growth for many developing countries and the best means of accelerating the expansion of off-farm agri-food activities, such as food processing and transport, which add value and generate income for rural residents. Agriculture must however be seen as a business enterprise and a part of the agri-food value chain that feeds rural and urban areas. This will requires diversifying and modernizing agriculture, which includes inputs, the adoption of climate-smart agriculture, post-harvest management, and also financial support for nutrition-sensitive and sustainable food production. However, Public sector investments are needed in agricultural research, especially research-based and focused on sustainable agriculture and agricultural technologies, the development of infrastructure to support agri-food systems. The Nigerian government should also support agri-territorial development tools, including special

economic zones, and agribusiness incubators for nascent businesses which can boost agriculture and associated activities in the agri-food system. The scaling up rural non-farm opportunities and the building of capacity for employment to improve incomes and livelihoods. However, investing in the non-farm economy will develop markets and financial services where they are missing or weak and also help individuals expand their businesses, provide greater returns for labor, and expand wage-earning opportunities, particularly for poor, female- and youth-headed households. The development of the non-farm economy can also increase the availability of services in rural areas, thereby deepening connections with urban areas. The creation of growth poles, corridors, and special economic zones in rural areas can leverage economies of scale to bridge market gaps. However, investing in educational and vocational training with an eye to future trends and emerging industries in rural areas will create a productive rural labor force for generations to come. Lastly, research is needed to fill key knowledge gaps which are related to rural–urban value chains and the challenges facing the heterogeneous landscape of rural non-farm activities. Furthermore, improvement of living conditions in rural areas with strong social safety nets is key to rural development for better access to basic services, and a healthier environment.

## **VI. Conclusion**

Rural development and revitalization in Nigeria in general and the Niger Delta region requires improvement in rural living conditions, improvement in infrastructure, educational development, and job creation. However, revitalization must go beyond markets to provide the basic services needed for rural development and provide better lives, especially for the poorest and most vulnerable populations, and also ensure a healthy environment. The traditional theory however has emphasized green environment development which relates to pollution and protection of ecological resources. However, Multiple models exist of how to successfully provide water, sanitation, education, healthcare, and social safety nets in rural areas. Likewise, evidence of models for improving rural productivity while protecting or improving the use of natural resources is growing. The Strengthening of the links between rural and urban areas can facilitate the provision of basic services in rural areas and contribute to increased support for healthy environments and sustainable provision of environmental services, but sufficient protections and safeguards need to be put in place to guard against unsustainable demand. Furthermore, to improve on the current air quality monitoring and assessment programs in the Niger Delta area there is a need to embark on the following;

(1) Government needs to develop monitoring mechanisms, regulations, and enforcement measures. (2) Institute planning policies that will minimize pollution that may be caused by future development. (3) Local government agencies such as the Niger Delta Development Commission (NDDC) should however collaborate with other multinationals and stakeholders on air pollution management to institute and implement a comprehensive AQM scheme for the region. (4) Local government should focus on the reduction of pollution levels from vehicles, industry, gas flaring, and domestic burning of timber, to permissible levels as defined by national and international standards in order for green development to take place. (5) The impact of air pollution from industrial and vehicular sources on the health of the communities in the region and its biodiversity needs in-depth research. (6) Existing air quality monitoring programs should however be re-examined and the introduction of new ones to determine the most effective means of mainstream national programs with regional projects to improve air quality. (7) There should be research on air quality that should focus on the source apportionment of the pollutants in the region. (8) An in-depth epidemiological and toxicological studies with the deployment of risk and exposure assessment tools need to be carried out in order to establish causalities amongst the air pollution exposure factors and the associated health problems. (9) All vehicles should be mandated for annual testing and other regulations must be created or re-introduced and strictly enforced. (10) There should be a general focus on air pollution models, and real-time monitoring of pollutants and particulate matter.

However, for the Niger Delta region to be able to enjoy its ecological resources, there is a need to engage in renewable energy, clean energy, and cleaner air initiatives for states to further their course in green development. The Local government should identify the various use of emissions abatement control mechanisms by polluters for better enforcement. However, The encouragement of human capital development is greatly important as the optimum use of the available human resources will do the Nigerian economy some much-needed good. Furthermore, the local government should be allowed more control of available resources. However, this should not be said that they should be allowed free rein without repercussion, no. A suitable system of checks and balances by which they can be held fully accountable for errors and suspicious activities should also be put in place. In all, the country will begin to see development in all rural communities rather than in just urban regions. The Nigerian government should reinforce discipline as it relates to planning, It was pointed out earlier that the election of a new government usually signifies an end to previously approved projects whether or not they have been started. This should however not be so. Certain rules should be put in place making it so that previously approved projects are mandated to be completed before new ones are implemented, regardless of the entry of a new set of government officials. Also, most important there should be a mass education relating to the topic of development Plans. The masses need to have awareness of the



development plans being considered as well as the objectives which they hope to achieve and through means by which feedback as to what effectiveness of the plan is to be received. Everyone including the citizens and stakeholders needs to be carried along. There should be an efficient based data collection, this is because a good development plan is heavily reliant on the availability of accurate data. However, this data goes a long way in determining the economic needs of the masses as well as the national requirements. The improper management of finances and financial crimes are heavily prevalent in Nigeria and need to be checked. Money allocated to these development plans should be closely monitored to be sure they are not being diverted to private endeavors or used for private pockets. Early research on patriotism in Nigeria, has shown that Nigerian lack some level of patriotism. Unlike the other solutions listed, this has to do with every individual who is a citizen of the country, right from the leaders in Aso Rock to the average citizen on the street. In a situation when people are focused rather than on what their country can do for them and more on what they can do for their country, then there is the only way possible that Nigeria as a country can move forward. However, the government (whether at the Federal, State, or Local Government level) should regulate and monitor the activities of the multinational oil companies and that of the host communities in the Niger Delta region. The government must ensure that the Niger Delta region and rural dwellings are developed at all costs and all necessary environmental laws and regulations are followed in the exploration of petroleum in the region to promote and encourage a green environment. The government and multinational oil companies must be seen to be fair and sincere to the plight of the Niger Delta people.

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