INTERNATIONAL JOURNAL OF ADVANCED STUDIES IN ECOLOGY, DEVELOPMENT AND SUSTAINABILITY

Vol. 1 No. 1 November, 2013

INTERNATIONAL JOURNAL OF ADVANCED STUDIES IN ECOLOGY, DEVELOPMENT AND SUSTAINABILITY
Vol. 1, No. 1, November, 2013

Published by
International Scientific Research Consortium
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National Library of Nigeria Cataloguing in Publication Data
A catalogue record for this journal is available from the Nigeria National Library

INTERNATIONAL JOURNAL OF ADVANCED STUDIES IN ECOLOGY, DEVELOPMENT AND SUSTAINABILITY
Vol. 1, No. 1, November, 2013

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THE IMPLICATION OF CLIMATE CHANGE ON NIGERIANS EDUCATION AND ECONOMIC DEVELOPMENT

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ABSTRACT
The paper argues that climate change affects education and economic development in Nigeria and pose a great danger to the wellbeing of individuals as well as social cohesion and therefore the sustainability of growth and development itself. Globalization has brought about the proliferation of industrial outfits. The increase in industrial output has not continued without its side effects. Environmental degradation has been on the increase leading to the deteriorating rate of climate change. The paper identifies environmental education as a veritable tool for climate change impact. The study is thus concentrated on the investigations of the level consequences being suffered by Nigerians as a result of climate change and what can be done to reduce or halt this growing menace. The study revealed that the more the production activity in an industry, the higher the degree of abuse on the environment. Exceptions exist, though industries with environment friendly policies and with modern equipments. The major determinants of climate change were industries gas emission, oil spillage, bush burning, flood, erosion, drought and desertification. Data for this study were analyzed using relevant statistical instrument at 5% significance level.

KEYWORDS: Climate Change, Economic Development, Education, Nigeria, Drought, Flood, Gas Flaring, Desertification.

INTRODUCTION

Climate is a very relative term that has a variety of closely related meanings. Climate connotes the average or typical weather conditions observed over a long period of time for a particular area. For instance the climate of the tropical oceans is warm and humid with occasional showers of thunderstorms.

Climate change is the long-term effect of the sun's radiation on the rotating earth's varied surface and atmosphere. If can be understood mostly in terms of annual or seasonal averages of temperature and precipitation. (Fair Bridge, 2007).

Climate has profound effects on vegetation and animal life including humans. It plays a significant role in many physiological and educational processes, from conception and growth to health and disease. Humans, inturn, can affect climate through the alteration of the earths surface and the introduction of pollutants and chemicals such as carbon dioxide into the atmosphere. Weather and climate have a profound influence on life and earth. They are part of the daily experience of human beings and are essential for health, food production and well-being.

The paper looks at the concept of climate change, its implication on education and economic development, data presentation, methodology, model specification and discussion, summary and conclusion.

THE CONCEPT OF CLIMATE CHANGE

Climate change refers to the average weather in terms of the mean and its variability over a certain time span and a certain area. Climate change is caused by factors that include oceanic processes (such as oceanic circulation), variations in solar radiation received by earth, plate tectonics and volcanic eruptions, and human-induced alterations of the natural world. These latter effects are currently causing global warming, and climate change is often used to describe human specific impacts.

Human activities, in particular those involving the combustion of fossil fuels for industrial or domestic usage and biomass burning produce greenhouse gases and aerosols which affect the composition of the atmosphere. The emission of Chlorofluoro Carbons (CFCs) and other chlorine and bromine compounds has not only an impact on the radiative forcing, but has also led to the depletion of the stratospheric ozone layers.

Human industrial, energy related, and land-use activities also increase the amount of aerosol in the atmosphere, in the form of mineral dust, sulphates and nitrates. Their atmospheric life-time is short because they are removed by rain. As a result their concentrations are highest near their sources and vary substantially, regionally with global consequences. The increases in green house gas concentrations and aerosol content in the atmosphere result in a change in the radiative forcing to which the climate system must act to restore the radiative balance. (Baede, 1999). As part of human activities that contribute to climate change activities is the land use policy of a people. The term “land use change” refers to a change in the use or management of land. Such change may result from

various human activities such as changes in agriculture and irrigation, deforestation, reforestation and afforestation, but also from urbanization or traffic.

The term climate change has become synonymous with anthropogenic global warming. Global warming refers to surface temperature increases while climate change includes global warming and everything else that increases green house gas levels will affect.

Climate change affects temperature, humidity, storm and rainfall. With the fulcrum of rainfall, human health depends on an adequate supply of portable water. Note that by reducing fresh water supplies, climate change may affect sanitation and lower the efficiency of local sewer systems, leading to increased concentrations of pathogens in raw water supplier. Climate change may also reduce the water available for drinking and washing. In developing countries, the anticipated increase in extreme rainfall events, which may be associated with the outbreaks of diseases, many overwhelms the public water supply system. Flooding is likely to become more frequent with climate change and can affect health through the spread of disease.

Furthermore, the impact of climate change will possibly increased agricultural productivity due to variation in rainfall and improved agricultural practice.
The number of refugees and displaced persons have increased recently due to climate change. These category of people are highly vulnerable and prone to health problems. Large scale migration is likely a response to flooding, drought and other natural disaster both the local ecological disturbance caused by the extreme event and the circumstances of population displacement and resettlement would affect the risk of infections diseases outbreaks. Even displacement due long-term cumulative environment deterioration, including sea level rise, is associated with such health impacts.

The import of this analysis is that, the effect of health and agriculture also affects education in terms of per calorie intake which inturn affects intelligent quotient of individual(s). It also affects the gene one would have being made up (Mcnamara, 2003).

Climate change affects the primary sector (agriculture, forestry, fishery and meaning), secondary sector (raw material processing, energy industry, power supply, water supply, construction and the tertiary sector (trade, traffic, logistics, tourism, hotel and catering trade, transmission of news, financial institution and transport services).

Climate change also affects revenue interms of tourism and recreation industries for example industries located in the coastal zone will suffer the negative impact of sea-level rise and attendant coastal inundation and flooding. Significant sea

level rise will virtually reduce beach based tourism and recreation industries as well as disrupt oil and gas exploration and extraction activities in the region.
The dynamics of consumer behaviour is partly predicated on atmospheric temperatures in the clothing they choose to wear or buy. Industries that produce clothing may have to vary their production profile by producing more or less of warm/cool weather clothing in response to changing demands dictated by either rising or falling temperatures. Similarly, industries may have to design and produce more wind storm-resistant umbrellas in both the northern and southern ecozones in response to rising or falling temperatures. Similarly, industries may have to design and produce more wind/storm-resistant umbrellas in both the northern and southern ecozones in response to rising incidence of severe windstorms in the northernmost parts by the country. Other industries affected by climate change will have to adapt or fold up. The telecommunications industry, for example is affected by heavy storms that fall cables. Sales slump under such circumstances and can seriously affect the industry. If this trend continues, staff may likely loose their jobs.

IMPLICATION OF CLIMATE CHANGE ON EDUCATION AND ECONOMIC DEVELOPMENT

Climate change plays a pivotal role on every countries development process. Thus as the global climatic condition takes a drive for the worse, this has affected land and people so negatively that the rate of production is reduce or curtailed by harmful environmental factors and inturn diminishes the human capacity for education and economic independence. It is sad to note here that those who contribute to climate change less are those who suffer from it the most (Ban, 2009). Although Africa contributes only about 3.8 percent of total green house gas emissions, its countries are among the most vulnerable to climate change in the world due to warmer climate, more exposure to rainfall, poor soils and flood plains (Janneh, 2008). This vulnerability has constrained agricultural production, worsened food insecurity and regard educational activities due to its negative impact which affects structures, man himself and the acquisition of educational materials through flooding, unfriendly and unconducive weather among others.
Climate change has emerged as a major threat to sustainable growth and development in Africa and the achievement of the Millennium Development Goals (MDGs) is general.

Climate change has affected most developing countries in tropical and subtropical regions. They are not able to cope with adverse climate impact due to rudimentary education and technological status.
For the benefit of hindsight, most natural disasters in Nigeria for instance are climate, weather and water released. This affects education and agriculture since most agricultural practices are rainfed which provides employment opportunities with inherent income generation avenue.

Most Nigerians are affected by the impacts of climate change especially subsistence farmers who depend on rainfed crops, shanty dwellers living on unsuitable land, often unstable and/or flood prone and lacking infrastructure and those living in extreme poverty.

Climate change has the potential to undermine the poverty reduction efforts of the government and could compromise the Millennium Development Goals (MDGs), such as eradication of extreme poverty and hunger by 2015 and the vision 20:20:20 of the present government.

Education is an essential element of the global response to climate change. It helps people understand and address the impact of global warming, encourages changes in their attitudes and behaviour and helps them adapt to climate change-related trends.

Climate change is currently at the centre of our daily life. It impacts and consequences are being experienced in Nigeria and the world over. Climate change is the alterations in the atmosphere that are over and above natural climate variation, and that are result of human activity.

As climate change cause variation in rainfall, this affects agriculture and create food scarcity (food crisis). Climate change can cause drought which affects people life and survival of livestock. This is to say that one of the effect of climate change is drought which result into increasing food insecurity and water scarcity. In Nigeria, women and girls are responsible for collecting water which means that climate change is bringing increased burden as the spend a greater part of each day fetching water. This inturn is actually serving to strengthen gender inequality, and poverty, as it means that women have even less time to participate in income generating activities, contribute to decision making processes or to find out about things that they could do to cope better with the impacts if climate change and of course it leaves less time for girls to go to school or for women to support children learning at home.

On the other hand, drought and other natural disasters reduce opportunities for employment at home, men who are expected to provide for their family, have to migrate elsewhere to look for work, where they face exploitation, dangerous working conditions and pressures associated with absence from households. This increases the possibility of children not to be provided with necessities which can help them to obtain school needs such as uniforms, stationeries, textbooks as well as psycho social support.

Climate change also causes food scarcity which result into children lacking their proper meals. The outcome is some children will drop out or become truants as they cannot go to school with empty stomach. Moreover, for those who opt to go to school might not be able to fully participate in the learning process as the are

hungry. Hunger affects both the body and mind, and therefore it affects the learning of children.

Furthermore, for the pastoralists and peasants societies, drought will force them to migrate into areas with green pastures and weather conditions which support pastoralism and agriculture. This means that the family will migrate with all their children, resulting into the children missing their education rights.

Climate change phenomena also results in houses, school buildings and other infrastructures such as roads and bridges being damaged impacting on children's right to receive education. Even where schools are not damaged by climate change effect, they are used as temporary settlements for victims. This also affects education negatively.

Climate change can cause air and water borne diseases which affects pupils health, and school attendance. This is because only a healthy person can attend school and income generating activity which inturn impacts on education.

DATA PRESENTATION
HUMAN DEVELOPMENT INDEX, GAS FLARING, FLOODING AND DESERTIFICATION IN NIGERIA

YEAR	HDI	GAS FLARING IN MILLION CUBIC METERS (M^3M)	FLOODING IN CENTIMETERS (CM)	DESERTIFICATION IN METERS (M)
1995	32.2	22830.0	480	9078.23
1996	24.2	24698.0	355	9011.35
1997	24.1	25406.0	301	8769.62
1998	24.6	25908.0	193	8552.21
1999	34.8	26316.0	296	8123.16
2000	40.6	26171.0	251	7911.14
2001	40.0	25222.0	250	7622.68
2002	39.3	23192.0	310	7123.45
2003	39.1	25692.0	1231	7123.45
2004	45.6	27890.3	1276.6	66962.23
2005	43.9	76000.2	1288.5	6702.43
2006	45.5	22898.0	1289.3	6534.56
2007	46.3	25566.0	1299.7	6167.13
2008	45.9	23429.0	1302.6	5999.11
2009	45.1	19378.9	1309.4	5823.67
2010	46.8	28544.1	1323.7	5503.13

Sources: 1. Nigeria's Environmental Profile
2. CBN Bullion Vol 19
3. Budget Office, Federal Ministry of Finance and Economic Development.

METHODOLOGY

This study used empirical techniques, relying on hypotheses to test for the significance or otherwise, of the major implications of climate change on education and economic development the impact of climate change on the economy. The multiple regression analysis is used to explain the changes in the dependent variable which is Human Development Index which is Haring (GFI), the rate of flooding (FLD) and the rate of desertification (DST) as independent variables (Koutsoyannis, 1977)..

MODEL SPECIFICATION AND DISCUSSION

The Human Development Index (HDI) which is the dependent variable is specified as a function of gas flaring, flooding and desertification. That is HDI = F (GSF, FLD, DST).

Where:

HDI = Human Development Index
GSF = Gas Flaring in Nigeria
FLD = Flooding
DST = Desertification

The econometric tool used for the analysis of the above data is a multiple regression model. This was to investigate the impacts of climate change on education and economic development in Nigeria between 1995 – 2010. This involves the testing of the hypotheses which are stated here as:

Ho: Climate change has no implication on education and economic development in Nigeria.
Hi: Climate change has implication on education and economic development in Nigeria.
Ho: Gas flaring, flooding and desertification have implication directly on Human Development (HD)
Hi: Gas flaring, flooding and desertification have implication directly on human development (HD).

Thus in econometrics model form;

HD = F (GFL, FLD, DST) - - - - - - - (1)

Equation (1) takes the form

$Y - bo - b1\ GFL + FLD \pm B3\ DST + U$ - - - - - (2)

Where:

b_0 = Intercept of the model
b_1 b_2, b_3 = Parameters (slopes) to be estimated.

U = Stochastic error term

The impacts of the three explanatory variables (GFL, FLD and DST) on the dependent variable are captured by slope b_1 b_2 and b_3 respectively. The apriori sign for b_1 is negative (–), b_2 is positive ($\pm$). While the influence of other variables that might possibly influence the dependent variable (unexplained variation) in any particular way are taken into account by the introduction into the model of a random (stochastic) error term 'U' when estimated, the estimated equation becomes

$$Y = b_0 - b_1 GFL + b_2 FLD + b_3 DST \text{ - - - - - -} \quad (3)$$

Consequently, the following estimated results were obtained using the multiple regression equation stated earlier and the data in Fig 1.

Y (HDI) =	12.83 – 0.0641 GSF	– 0.01605 FLD	– 1.104 DST	- - (4)
S.E.E	(3.65)	(0.126)	(0.085)	(0.34)
t*	(3.5)	(-0.57075)	(-0.189)	(-3.19)
P – value	(0.0034)	(0.6197)	(0.85)	(0.0064)

$R^2 = 0.69$ Adj $R^2 = 0.62$ F* N = 16 F* 10.43

The above estimates depicts that b_0 is 12.83 which is the intercepts of the parameter. By implication the autonomous term is positive.
b_1 (GSF) is – 0.0641 which depicts a negative relationship that there is an indirect relationship between Human Development Index and rate of gas flaring. A unit increase of gas flaring will decrease the level of development (HDI) by 0.041.
Similarly a unit increase of flooding (FLD) rate will decrease development (HDI) by 0.01605. So also a unit increase in desertification (DST) will decrease development (HDI) by 1.104.

The coefficient of multiple determinations R^2 is used to test the explanatory power of the independent variables. The R^2 obtained from the regression result is 0.69 or 68%. This means that 69% of the total variation in the explained (dependent variable) is determined by the explanatory (independent variables). Whilst the remaining 31% is due other variables which are not included in the model that are qualitative in nature. Hence we conclude that there exists a strong positive relationship between the dependent and the independent variables.

The Standard Error Estimates (SEE) enable us to decide whether or not the estimates b_0 b_1 b_2 and b_3 are significantly different from zero. From the result obtained, the parameters b_0 and b_3 are statistically significant so, we accept H1 and reject Ho.

The P-values are used to check the probability of accepting the null hypotheses or the alternative hypothesis. That is the probability of making a type one error.

SUMMARY

Education and Economic Development would only be sustainable if climate change education is made functional in our educational institutions and through advocacy programmes organize in a way of enlightening the general public. It has been deduced that gas flaring, flood, desertification are major impediments to education and economic development in Nigeria. This menace can be ameliorated through mass enlightenment and sound value orientation should be inculcated into all citizens. Government, communities, non-governmental organization should be involved.

Producers must be encouraged to use modern techniques that is climate friendly and would give them optimal output and minimal harm on the environment. Companies and organizations should after their production come up with corporate social responsibility that can impact positively to the environment.

Soder (2005) suggested that the West African region could generate renewable energy out of products and by-products of agriculture and forest.

CONCLUSION

The Nigeria nation cannot compromise it development objectives due to negative climate change impact. Nigerian has growth potentials for every productive activity and can do better with climate change education awareness.

Adaptive measures can be for climate change issues that have already advanced beyond the preventive phase. This with so because any harm to the environment by one particular individual sends ripple effects all round the globe. This will the findings of this paper and technological innovations vis a viz education, production activities can continue progressively for the betterment of humanity in order to meet the increasing human needs with no harm to the environment.

Thus from the result of our analysis, the implication of climate change on education and economic development was left in the Nigeria economy as gas flaring, flood and desertification have a negative relationship with the Human Development Index (HDI). From the above conclusions therefore, it can be deduced that climate change has impacted negatively on the country. Thus it is unhealthy for the education and economic situation.

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INTERNATIONAL JOURNAL OF ADVANCED STUDIES IN ECOLOGY, DEVELOPMENT AND SUSTAINABILITY

Vol. 1 No. 1 November, 2013

A PRELIMINARY FRAMEWORK FOR PEDAGOGY ON SUSTAINABLE HOUSING POLICY IN NIGERIA UNIVERSITIES

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Abstract

Policy pull is one of the probable solutions in addressing the effect of sustainability, as it is one of the key factors in achieving sustainable development*; a survey to ascertain whether there is significant changes in rental values of some categories of residential houses before and after implementation of monetization policy in Abuja were carried out. A literature review was carried out of existing policies on housing and sustainable buildings in Nigeria, a total of 455 Questionnaires were distributed to civil servants around Abuja; with a return rate of 86.15%. The study to examine this policy was positive, that monetization policy had effects on the civil servants and that policies are required for effective delivery of sustainable housing. Those who choose strongly agree are 23%, that monetization has enhanced their ability to build a house while 38.8% agree that this policy enable them to build their own house. These in turn spur the development of a framework for sustainable housing policy to be included in the curriculum of universities undertaken built environment courses in Nigeria. This research proffers a preliminary frame work for policy on sustainable housing as this would enhance adequate measure to equip our future designers, builders and planners on the need for sustainable housing development in Nigeria.*

Keywords: *Nigeria, Pedagogy Policies, Preliminary-Framework, Sustainable-Housing*

1.0 Introduction

Sustainability is an urgently needed response to man – made environmental threats, since it is difficult to modify architectural curriculum effectively due to academic inertia. What is needed are critical individuals that can reflect on the curriculum and the practice in order to better serve the profession, as it stands there is great resistance to any form of change (Thanos, 2005; Mark, 2008; Mark & Charles 2009; Paula, 2009)

Abuja is the Federal Capital of Nigeria. It was created in 1976 but officially became the administrative capital of the nation in 1992. The Federal Capital Territory was carved out of the then three neighboring states of Niger, Kwara and Plateau states. It is bounded on the North by Kaduna State. On the East by Nasarawa State; on the South by Kogi State and on the West by Niger state. It is locates between latitude 72°5 north and 9°20 North of the equator and longitudes 6°45 and 9°39' East of the Greenwich Meridian.

The interaction between teachers and students was characterized by "both striving to control the learning environment," but given the power differential, students typically lost in this effort. This tended to set up a competitive win lose context between teachers and students, and students themselves, with the corresponding results of non-dialog and attempts to persuade and transform (Thomas, 1987). The use of studio pedagogy is an appropriate avenue for exploring and developing solutions to sustainable housing. The studio format offers additional educational benefits for students tackling the challenging and complex issues associated with sustainable housing by offering opportunities for: (1) active, engaged learning; (2) work on 'live' projects/ problems; (3) understanding and resolving conflicting viewpoints and goals in the design/development process; and (4) understanding how other coursework concepts are integrated and applied in real "live" projects (Pernille and Elaine 2010; Heathcott, 2007).

1.1 Policy Implementation and Housing Delivery

The Nigerian National Housing Policy which was launched in 1991 in response to the Agenda 21 of global shelter strategy was aimed at achieving sustainable human settlement development. The country's housing development policies are designed in favour of those in the middle and upper income bracket. Proposed housing developments for the poor are either hijacked, not sufficient. About 90% of housing production is primarily in the hands of individual private market.

1.2 Pedagogy

Pedagogy was originally developed in the monastic schools of Europe in the middle Ages. Assumptions regarding learning and learners were based on observation of monks in the teaching of simple skills to children (McAuliffe, et al., 2009).

1.3 Definition of Pedagogy

'Pedagogy' is the practice of teaching framed and informed by a shared and structured body of knowledge. This knowledge comprises experience, evidence, understanding moral purpose and shared transparent values. It is by virtue of progressively acquiring such knowledge and mastering the expertise – through initial training, continuing development, reflection and classroom inquiry and regulated practice – that teachers are entitled to be treated as professionals (Teaching and Learning Research Programme and the General Teaching Council, 2012)

Pedagogy is the art of supporting learning and the process of how knowledge is negotiated, discovered and produced. In an academic context and in the light of dialogue and personalizing learning theories, research supervision could be defined as a constructive exchange of 'cognitive gifts' (ideas, thoughts and debates) that takes place between the student and the tutor within a democratic environment where the student is an individual and not a number. (Persephone, 2011)

The following are list of pedagogy adopted from UNC 2012; it listed 150 pedagogies and 30 strategies for education innovation (Nair 2008) were critically reviewed to sort out those that are related to pedagogy in Architecture and choose the ones that relate to housing design. Not all will be used at a time. Present situation will lead to which to use, or after using one and the objective of the lesson is not achieved then another will be selected to use so as to achieve the aim. For instance particular sustainable building was discuss in a class so that students should design sustainable housing, it will not be very clear to the students without visiting the case study.

1.3 List of Pedagogy

Table 1; types of pedagogy for possible teaching of housing policy

Lecture method	Class discussion	Presentation by students
Desk crit	Seminars	Field trip
Expert guest critics	Presentation by a panel of instructors	Use of technology and instructional resources
Group critique	Research	Case studies

2. Method

The scope of the research focused on the monetization of rental value of property in Abuja which includes different categories of properties such as Flats, Duplex, and Detach buildings. A total of 455 Questionnaires was distributed to the civil servants 392 was return back.

3. Discussion

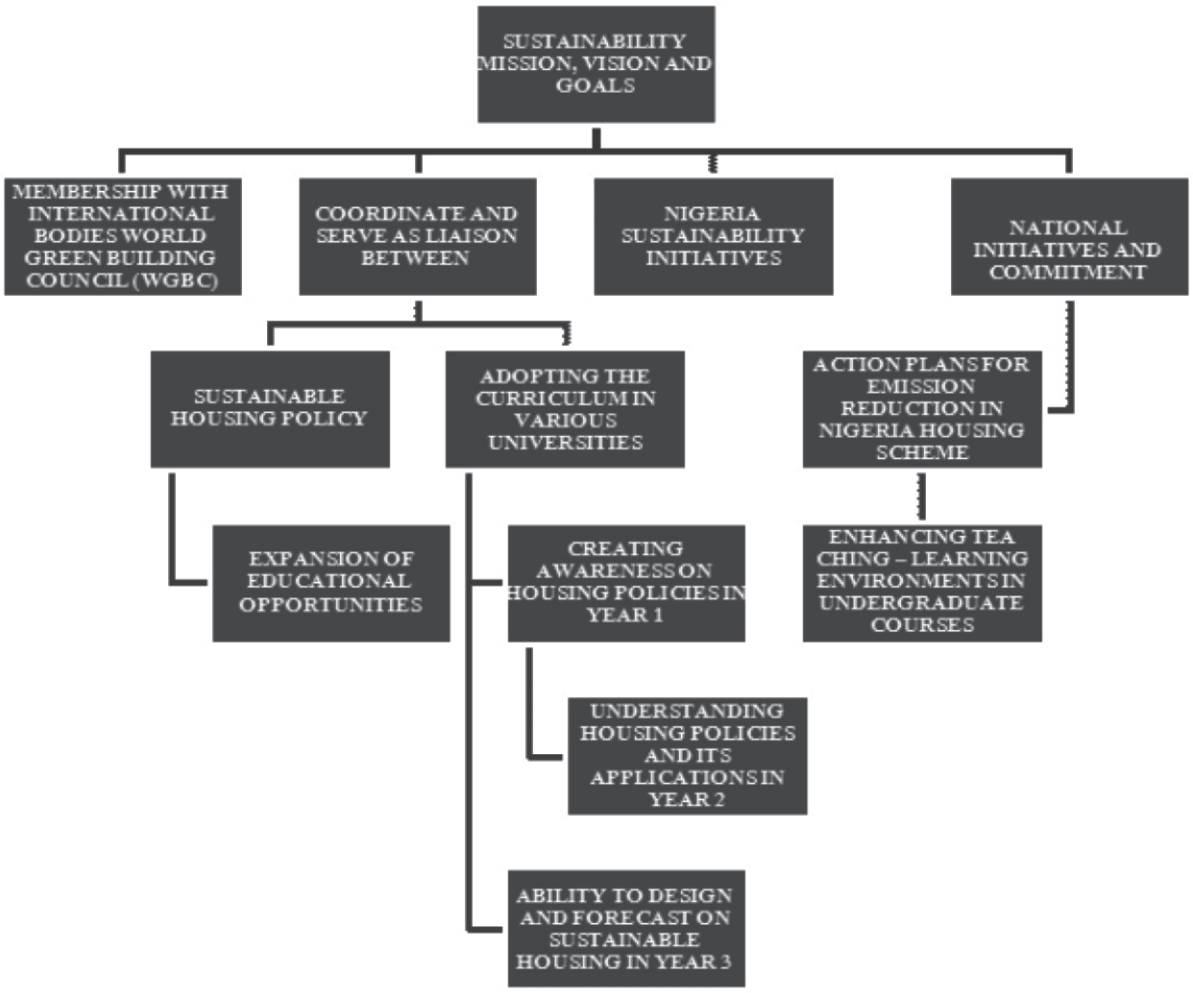
Table 2; It takes me to a better place

It has force me to build my own house		
Rating	Frequency	Percentage
No response	102	26
Strongly agreed	90	23
Agreed	45	11.5
Undecided	37	9.4
Disagreed	27	6.9
Strongly disagreed	91	23.2
Total	392	100

Table 2; This table the policy has forces me to build my own house, Those who did not respond have 26%, those who rank strongly agree are 23%, then those who rank agree are 11.5%, undecided her 9.4% rank while disagree are 6.9% and strongly disagree are 23.2%.

Table 3; does this policy enable you to build your own house?

	Frequency	Percentage
Yes	154	38.8
No	215	54.8
No response	25	6.4
Total	321	100.0



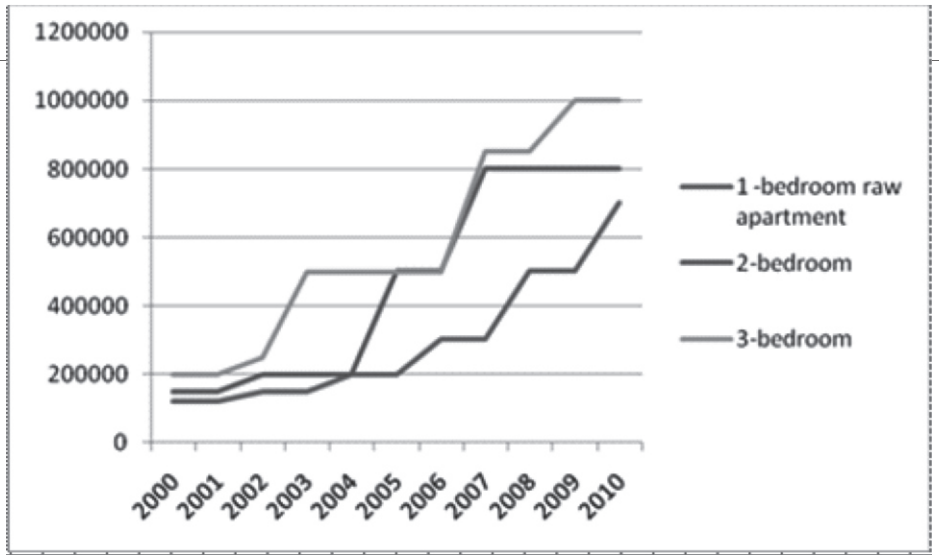


Fig 2; Framework for Pedagogy on Sustainable Housing Policy in Nigeria Universities

4. Conclusion

The Nigerian Housing Needs increase as the growing rate of urbanization in Nigeria is drawing a global attention. With a population of above 160 million, the country has about 30% living in the cities. This accounts for the sprawling nature of these cities. Abuja was designed for about 3 million at full growth, but as at 2004, it has an approximate population of about 6 million. Abuja is one of the fastest growing cities in the world. This unprecedented rise in population and the size of our cities over the past few years have resulted in the acute shortages of basic essentials of living. Therefore, the return rate of questionnaire is 86.15%. Those who ranks strongly agree are 23%, that monetization have enhanced their ability to build a house while 38.8% agree that this policy enable them to build their own house (Mhairi & Fumiyo 2008). These in turn spur the development of a framework for sustainable housing policy to be included in the curriculum of universities undertaken built environment courses in Nigeria. This research proffers a preliminary frame work for policy on sustainable housing as this would enhance adequate measure to equip our future designers, builders and planners on the need for sustainable housing development in Nigeria.

Acknowledgements

This work is an extended version of a master thesis in **Universiti Teknologi Malaysia** (UTM) by the second author, and the authors would like to **acknowledge and thank the International Doctorial Fellowship (IDF) initiated by Universiti Teknologi Malaysia (UTM) supported by the Ministry of Higher Education (MOHE) Malaysia and The Educational Trust Fund (ETF) Nigeria for contributing to this research**

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INTERNATIONAL JOURNAL OF ADVANCED STUDIES IN ECOLOGY, DEVELOPMENT AND SUSTAINABILITY

Vol. 1 No. 1 November, 2013

PROMOTING OUTSTANDING LEADERSHIP QUALITIES FOR SUSTAINABLE DEVELOPMENT: NEW CHALLENGES FOR AN EMERGING DEMOCRACY AND INCLUSIVENESS IN AFRICA.

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ABSTRACT
Leadership has become an intellectual issue, a socio-political, cultural and economic development challenge in Africa. This is because of what Africa countries and economies have missed in terms of the emergence, practice and benefits derivable from outstanding leadership qualities expected from African leaders and elites for a rigorous and effectively driven implementation of sustainable political-economic, national, and millennium development. The paper examines the urgent need for the promotion of truly outstanding leadership qualities among African leaders at all levels for overcoming the challenges of emerging democracy, inclusion and sustainable development in Africa. Relevant literature on conceptual and theoretical frameworks on outstanding leadership qualities, the standard form of Western democracy autochthonous, the kind of democracy Africa needs, sustainable development practices in Africa in general and Nigeria in particular. The findings reveal that the persistent dearth and failure of leadership qualities among African political and elitist leaders. As regards policy implications the emergence of outstanding leadership qualities among these leaders constitutes the best practices approach in overcoming impediments to cost beneficial, democratic systems, the practice of good governance for the required masses oriented, empowerment, inclusive democratic systems and sustainable development for African Countries.
Key words: leadership qualities, democracy, governance, inclusiveness and sustainable development, African economies.

INTRODUCTION

It has been generally observed that leadership especially his outstanding qualities play a prime role in determining the fortunes of an organization, political systems, institutions and the entire societies. Today, leadership qualities is at the heart of discuss at any given opportunities in discussions lectures circuit, workshops development seminar in African countries and anywhere in the world (Business Day April 10, 2010). The outstanding qualities of a leader in Sectors and institutions have become philosophical and ideological and practical issues with serious implications for sustainable social political and economic development and challenges for emerging democracy.

The foregoing is due to the fact that the emerging African political systems and economics have missed in terms of the manifestation and practice of outstanding leadership qualities that would have effectively organized and systematically implement an autochthonous and sustainable social - political cultural and economic development as well as overwhelmingly the challenges of emerging democracy in Africa. That is with the objectives of this emerging African democracy measuring up to the best standards, criteria and principles of a truly democratic system vis- a-vis the rule of law, credible electoral and representative systems transparency, Accountability, good corporate governance, integration and participation of the masses, communities and collectivities for an autochthonous and sustainable development of a particular African country.

Number of factors has been observed for the dismal failure of the development enterprise and its sustainability in Africa. These include the colonial legacy, ethnicity, socio pluralism and divisive tendencies socio-political conflicts, dearth of qualitative leadership, corruption, poor planning and incompetent management, impropriate policies, limited flow of foreign investment, the stance and regulations of the international regulatory bodies such as World Trade organization, International Monetary Fund and others *(Ake 2001, Adedeji 1990, Ndulor 2008)*.

Alone or in combination, these factors constitute serious impediment to sustainable development in Africa. However by all indications, the dearth of visionary and leadership qualities combined with national and global political conditions are the greatest impediment to sustainable democratic and economic development in Africa.

THEME OF THE PAPER

In its theoretical orientation, the study probes the concept of leadership qualities, their content and precise relationship with sustainable national development and challenges to an emerging democracy in Africa. The paper analyzes the theories and researches on leadership qualities, and characteristics of sustainable socio-political and economic development in Africa, the nature and characteristics of democracy in the advanced industrial economics as an emerging democracy in

Africa. That is principles be necessary for a truly sustainable development of any particular African democracy political and overcome system challenges democracy.

CONCEPTUAL AND THEORETICAL FRAMEWORK.

Qualitative leadership is a social influence process at individual and group levels in which Leader tries to obtain the voluntary participation of the followers' employees or maxims in an Effort to achieve societal or corporate objectives. A leadership quality entails more than wielding Power and exercising authority and an involves mentoring, coaching, inspiring and motivating leaders building teams, generate cohesion and resolve conflicts at the group and community Level. Finally, such leaders build culture and generate change at the organizational and community levels. On the other hand, follower ship or the people, research has revealed, seek, admire and respect leaders who foster emotional feelings of significant community and Excitement and transformational change (Kreisler and Kris eke 2004, R.J 2001, R. Goffee and G. Jones 2001).

LEADERS' RESPONSIBILITIES

In Organization and societal settings, leaders have both general and specific responsibilities. In general, they have the ultimate responsibility to lead their followers to the achievement of set mission or goals. They do this mainly in the process of leading by examples as a role model with Vision, capacity for determination of a sustainable and credible goals or mission to pursue together with time frame, organizing leading moderating and rewarding, succession planning, evaluation and acting as charge agent *(Kreitner and Kinichi 2004)*

THEORIES ON LEADERSHIP QUALITIES

Traditional

In trait theory. Historical leadership research did not support the notion that effective Leaders possessed unique traits from followers. However, recent researches carried out to confirm or reject the trait theory of qualities of leadership showed that people preferred as leader individuals that possess one or more of these trails; intelligence, dominance are perceived as leaders. .A study also revealed that people valued credible leaders, described as honest, forward-looking, inspiring and competent and that men and women were seen as displaying more task and social leadership. Ohio State University Studies revealed two independent dimensions of leadership behavior consideration and initiating structure. On concept and practice of leadership qualities, author of the leadership theory proposed that leaders should adopt styles that demonstrate high concern for production and people.

The contingency model explained relationship between leaders' effectiveness and situational control with regards to leadership, qualities leaders are either task motivated or relationship motivated. Task-motivated leaders are effective under

situation of both high and low control Relationship-motivated leaders are more effective when they have moderate situational-control of the leader-member taste structure and position-power in the path goal theory: there are 3 key changes in the reviewed theory. Leadership quality and effectiveness depend on employees of follower hip characteristics and environmental factors. Leaders expend more efforts to foster motivation through empowerment. Leadership is shared among people or employees within an organization. On the situational leadership theory effective leadership qualities depends on the level of the followership as regards to direction, participation and delegation.

TRANSACTIONAL AND TRANSFORMATIONAL LEADERSHIP Transactional leadership focus on the interpersonal transaction between the two leadership and followership. It is a developmental. There is a fundamental different between the two leadership qualities. Transformational Leadership takes a long term view of the enterprise or nation being led Furthermore while transformational leadership deliberately focuses more on mission- critical strategic issues such as how to continuously increase both the responsiveness of the enterprise or nation to charge and its ability and readiness to exploit charge opportunities.

Transactional leadership focuses more on the guide pro quo (this-for-that) of the leader and follower relationship. It is so easily default into an unbroken cycle of deals that are mainly design to maintain the status quo. Charismatic Leaders motivate followers to pursue organizational goals above their interest and organization culture and value systems, and aspiration. The follows hips are important for qualitative and charismatic leadership.

These forms of leadership are important for organizational success and sustainable national development. The best leaders, research as revealed, are charismatic and transformational and leaders can be trained to acquire these qualities, Leader-Model Exchange Model of Leadership; Revolves around the development of dyadic relationship between the leader and the fellowship. Servant Leadership is another form of qualitative leadership. It is another qualitative leadership, it is based on the promise that great leaders act as servants putting the needs of others including employees, customers and communities as their first priority. The characteristics including Listening, Empathy, Healing, Awareness, Persuasion, Conceptualization, Foresight, Stewardship, Commitment to the growth of the partnership-leadership style this is a another concept depicting leadership qualities, cooperation of groups, and other collectivities, most especially national and international networks for the promotion of social political and economic growth and development as sustainable project.

SUSTAINABLE DEVELOPMENT

Many factors are the been offered for the dismal failure of development enterprise in African Economies Nigeria inclusive. The political context of the

development enterprise during colonial acid post - colonial has rendered it improper able. The colonial state exhibited absolutism and arbitrariness and showed hardly any interest in transforming this domination into socio - political and economic development. In post - colonial African, the premium on state power was exceptionally high - political competition among the political and ethnic elite tends to assume the character of warfare marginalizing everything including the quest for a suitable socio - political and economic development. The ideology of development in the 60s and 70s was abstract and represented only the interest of African political elite and their external patrons (Ake 2001 UNDP (2008).

Similarly the United Nations in its International Development strategy for the second Developrnent decade declared that for sustainable development the ultimate objective of development must be to bring about sustained improvement in the well - being of the individual and bestow benefits of the individual and on all. If induce Privileges extremes of wealth and social injustice persist, then development fails in its essential purpose Qualitative and structural change in the society must go hand in hand with rapid economic growth and existing disparities, regional, sectoral and social should be substantially reduced.

Both the United Nations and the World Bank now use a wider array of indices to indicate Comparative levels of development amongst nations, Average gross industrial produced (per capital), annual rate of inflation, adult working Life Expiatory, Population, Nutrition, Arnong Education, Transport and Service, Communication Industry Foreign Trade, general examine inductors and technology and recently the Human Development index However, despite institutional, refusal and globate efforts. All over the world there is growing gap between the rich and poor at the levels of individuals and nations. The process globalization has brought about many possibilities for rapid economic advancement of humanity for the poor and undeveloped countries alike.

The tragic and unfortunate irony is that developing countries especially those in Africa, continue to be spectators in the globalization process, a process that is undoubtedly irreversible, with devastating results for the millions of people in these countries. Through out much of the developing world, the awakening to globalizations down side has been one of resistance and resignations, a feeling that globalization is a false God foisted on weaker states by the capitalist centers of West.

Whatever the reality is, in this view, the perception of a seize and unless the basic principle of equity and liberty are defended in the political economic area and advanced as critical conditions for economic growth, globalization will continue to wreak havoc in developing countries and may suffer rejection, as stated by James Wolfensohn, former president of the world Bank in his address to the tenth UNCTAD meeting in Bangleok 16, February 2000.

LEADERSHIP CHARACTERISTICS AND QUALITIES

Determination of Goals and Objectives: Leaders determine goals and objective between collaboration with their followers or subordinators. They also determine the time frame for achieving goals, the leader has the primary responsibility to lead, set up appropriate machinery process and also needed resources with plain to archival objection reasonability both skill and luck for ranging people and materials lawyers. He will need in particular, the Cooperation and Support of both this follower and all other relenent persons and bodies he will more likely Succeed if he his focus and character. He also often needs experience it. The knowledge of precedence, to guide his decisions against costly errors.

Legitimacy Above all these, the leader Legitimacy, in the sense of achieving leadership position through proper procedure and not through fraud or similar methods. More important still he needs the Divine Spirit to guide his actions, just as he would not have become leaders in the first instance, without Divine Help Illegitimate leaders, like that those become leader, through electoral fraud, treachery, or similar vices, have a more fundamental problem of gaining the acceptance and recognition of followers and all other relevant persons.
Self opinionated and self – righteousness: Leaders with these regulative qualities have problems. They characteristically believe that they are always right, while others are always wrong on pertinent issues. They therefore normally stick to their views, however untenable such view may be.

Power and Authority: Another notorious aberration of leaders is the tendency for some to rely mostly on the use of authority in dealing with their followers or subordinates. These concerned ignore somehow the widely known limits of the use of authority as a weapon for influencing the behavior of subordinates the issue therefore is that in order to achieve the objectives, leaders will rely less or the use of authorizer but more on trying to influence followers through the force of example and efforts to convince them that they are pursing a wonting cause along with the leader. This is variously the ideal for achieving success -generally whereas however, followers are supposed to be vigilant always and to checkmate their leader for any excesses success generally or wrongdoing. Cases abound where followers behave contrarily Leadership recruitment.

Leadership Recruitment: on the question of style generally, leader will adopt styles that are appropriate to the occasion, but in which also produce conducive climate for work or development hence the popular belief that, generally speaking a country is great or small, according to the quality of its leaders. For this and other reasons, leaders should be selected very carefully, in due consideration of their various responsibilities as outlined above and any peculiar qualities which the position will demand from them. They will also often need to be trained specially for their new roles, so that they can perform optimally and avoid unnecessary pitfalls. On their own part they (the leaders) should always try to perform well. Furthermore, in general and at the expiration of their term, good

leaders are always remembered for one thing or the other. The bad ones are remembered for nothing, except may be their non performance or the harm they did, white in office.

Accountability, Transparency and Probity

Corrupt leaders in general, constantly face predicaments which they will naturally wish to escape from, using various strategies which however usually fail. Leaders create problems unduly for themselves and for others wherever they abuse their offices to the extent of being tried and failed ultimately. It happens also that, in organization and open societies, leaders who also should normally be harbingers of peace and harmony, are instead seen sometimes to be the very ones sometimes trouble and disturbing public peace.

On a similar note are cases of leaders who believes that the end always justifies the means, will proclaim a do or die or rough and ready to approach to political contests, instead of the more civilized approach of taking it easy and following due process. All these, put together make followers wonder aloud sometimes, asking rhetorically, what sort of leaders are these and what do they think they are doing. Do they have conscience at all Leaders are supposed to always be at peace with everyone, but most especially with their deputies.

Courage

Another outstanding quality of leadership is courage this in the capability to sacrifice personal inference are's life includes and ideologies for the collective interests and stood against or depilatory and ingeniously deal with appositional groups, cabals ensure and other

Travesty Of Justice: Jega (2006) posited that this is one of the major problems bedeviling the administration of justice and rule of law in Africa. This is because, it is as if there no leader with integrity in this country. political party A and B contest for an office because of loopholes in the constitution, political party A declares the winner of the election, instead of the regulating body INEC to wait for the appeal, to come up with their findings such will be declared the winner even if it is so glaring like that of some countries in Africa. Nobody and no one is doing anything to avert the situation that is the reason why outstanding leader with proven integrity is a bedrock for Africa to take bold step the global world and to ensure that the perpetrators of these travesties of justice are brought to book Featus Keyamo (2010).

Corruption: Femi Falana (2010) opined that is a cancan warm which has eaten deep into the fabric of our society. Political offices in our country are now being targeted by businessmen who see it as give and take. Karl Marx

(1848) posited that the main motive of these elite class is to exploit and oppress the masses with sole aim of maximizing profits. With the huge sum of money invested either directly or indirectly such will be expected to come in triple folds, by aspiring for their gains lead to; frauds, financial misappropriation, mismanagement, double-standard, inflation of contracts, transfer of money to foreign account, etc. unless and until, a honest leader mount the podium in this Africa development is going to be vicious circle that can only be targeted with no result Nuhu Ribadu (2010).

High Cost Of Living: Total fall in standard of living has led to lots of Nigerians indulging in something that are inhuman by subjecting the majority of Nigerians to unknown hardship and servitude. Jega (2010) posited that such leads some to sell their babies, crime, prostitution, rituality hide under disguise of religion to exploit innocent hardworking people, exploitation, maternal mortality, infant mortality, fake drugs, labour migration etc. All these need to stop now. The only viable way such economic turnover and growth can be achieved in Africa is through leadership quality that possess exceptional quality of pro-activeness.

CHALLENGES OF AN EMERGING DEMOCRACY IN AFRICA NIGERIA CASE STUDY

In the context of sustainable national Socio-political and economic development, It is necessary to define democracy. Feasibility is at issue an African country such as Nigeria in the context of development practice in any Africa, it country has been suggested that Africa requires more that the crude variety of liberal democracy that is being foisted on it, and even more than the impoverished liberal democracy that prevails in industrialized countries (Ake, 2001).

Democracy is inimical to the idea of people having effective decision making power because its essence is the abolition of popular power and its replacement with the rule of law, it evolved, liberal democracy got less democratic as its democratic elements such as the consent of the governed and popular participation came under pressure from political elites all over the world a, well as man stream of social science (Ake 2001) Western democracies have constantly reflected it to the determined of democratic values.

The West Attitude to Democracy in African

According to the interest group theory of democracy, the citizen is no longer real or potential law makers a particular in sovereignty but only a supplicant for favorable policy result in accord with artificial interests. *(Almond ad verbal (1980)*.

As people decide to settle for protection, sovereignty disappears. In the hurry to globalize democracy in the wake of cold war, democracy has been reduced to the crude simplicity of rnulti party elections to the benefit of some of the world

notorious autocrat, such as Daniel Afar mol of Kenya and Paul Diya of Cameroon (Ake 1991). From the early 1990s issues of democratization and human rights began to dominate the west interest in Africa.

But Africa is so marginal that it is difficult for non Africans to bring themselves to care about what happen on the continent, including democratization, particular when it entails some. the west are more interested in economic policy reform than democracy. The west continues to collude often profitability, in making arms available to African government, arms that are used for repression rebellion and forms of self determination such as in the Niger Deter (Ake 2001).

The kind of Democracy African Needs

A having discuss the kind of democracy that is unsuitable for Africans, it is time to redress, the balance by taking account of the social political and economics realities of Africa. And the suitable democracy for an African country relating such as Nigeria would have the following characteristics. *(Ake 2001 OAU 1986)*

I. A democracy in which people have some real decision making power over and above the formal consent of electoral choice.
ii. A social democracy that places emphasis on concrete political, social and economic right as opposed to a liberal democracy that emphasis abstract political right.
iii. Democracy that puts as much emphasis on directive rights as it does on individual rights.
iv. It will have to recognize nationalities, sub nationalities, ethnic group and communities as social formation.
iv. A democracy of incorporation to be inclusive as possible, the legislative bodies should in addition to nationality groups have special representation of mass organizations especially youth, the labour movement and women.

Realizing this kind of democracy will depend partly on how for the democratization process is driven by outstanding leadership qualities. The standing of the political elite's leadership styles suffers not only from evident management failure but also from their appearance or neither knowing what to do about the monitoring crisis nor being in control of event

African political elites have been further weakened by their poverty ideals and their humiliation due to lack of outstanding.

in some countries while politicians as public officers are accumulating wealth police then are out of control and openly red extort money from citizens while poorly paid soldiers heave become bound its. A major asset to democratization that there is no alternative to outstanding leadership qualities and qualitative participative development.

A conference of more than five hundred groups representing non-governmental organizations, UN agencies and government convened in Arushai Tanzania in

February 1990 pointed out that the absent of democracy is the main cause of the chronic crisis in Africa.

A strong movement for democracy is firmly in place in Africa, and it has had considerable success. An impressive number of African countries can boast of electoral competition, constitutionalism, popular participation and a respectable human right record. Botswana, cape verole, Senegal, Namibia, Mali, Zambia, Gambia etc. Many more have made attempt of democratic transition. These include Nigeria, Ghana, Cameroon, Angola, Tanzania, Niger, Congo, Burkina Faso; etc most of these have turned out to be false start.

The Average annual growth rate per capital income for Sub-Sahara Africa between 1973 and 1980 was a minimal 0.1 percent: between 1980 and 1989 it was -2.2 percent.

We affirm that nations can not built without the popular support and full participation of the people, nor the economic crisis is resolve and the human and economic conditions improved without the emergence full effective contribution, creativity and popular enthusiasm of the vast majority of the people. African countries must realize that, more than ever before,, their greatest resource is their people and that it is through their active and full participation that Africa call surmount the difficulties that lie ahead. However, people driven democratization will continue to be challenged by lack of outstanding lack ably effort the elite-driven democratization that reduces democracy to multiparty electoral competition and generally exploits it as a strategy of power. it is by no means clear that people-driven democracy will prevail. But it has a four chance. Nearly every country or political regime, whether in Africa, Europe, Latin America or Asia claims to be democratic, yet, what each of these regimes says or does is different.

Democracy is suppose to bestow an area of legitimacy on modern political life, especially when aspects such as rules, electoral process laws policies and decisions appear justified and appropriate.

Promoting outstanding leadership qualities for sustainable development and effective democracy in Nigeria.

There is urgent need to promote the transformational servant and partnership leadership qualities in the Nigeria leadership levels of presidency National Assembly the judiciary and public and private sector levels. The leadership must reduce corruption and abuse of office and exhibit sufficient courage to deal with those groups and others opposition, by social and political cabals and caucuses to transform the infrastructure of power energy needed for re engineering economic growth and development.

There is need to encourage such transformational qualities the leadership openness, transference and free and fair elections passage of the information bill and adoption of the Uwais report on electoral reforms. These qualities including effectual recruitment, legitimacy, the rightful use of authority and power as against selfish and of opinionated leadership can promote that democracy in which people have from real decision usual power over and about the formal consent introduction and development and attitudinal and paradigmatic change including the inculcation of outstanding leadership qualities. This will bring about a new era where the social democracy is been to faster pragmatically consecrate political social and economic right as opposed to the liberal democracy that emphases abstract political right. That is the established of a democracy that emphasize collective rights, self determination individual right, a balance federal system, nationalities ethnics group and community as social formation for suitable social - political and economic development. That is a democracy of incorporation to including the legistrative bodies' recognition of youth, labour movement, civil societies and professional groups and behaviour change followership.

CONCLUSION

The problems and challenges of sustainable development and effective democratic system have been highlighted. These included the type of outstanding leadership qualities that will need to be promoted to established truly political democracy, cooperate governance and the realization of sustainable social - political, cultural and economic development in Nigeria and African countries.

This transformational and other outstanding leadership qualities will need' to be promoted to bring a new era and reform of electoral system grater infrastructural development and a paradigm of integrated participative and people centre realization of the milleuim goals

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INTERNATIONAL JOURNAL OF ADVANCED STUDIES IN ECOLOGY, DEVELOPMENT AND SUSTAINABILITY

Vol. 1 No. 1 November, 2013

DEVELOPMENT ADMINISTRATION AND GAS RE-INJECTION POLICY-MAKING IN NIGERIA

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Abstract

This article examines the challenges of Development Administration (DA) in postcolonial Nigeria focusing on the problems of gas re-injection policy-making and implementation as symptomatic of the process of DA since political independence in 1960. The Nigerian postcolonial state has been tinkering with gas re-injection policy-making and implementation right from 1969, without success, as exacerbated by the failure of the three popular gas flare-out deadlines of 1984, 2004 and 2008. Today, Nigeria remains the second highest gas flaring country in the World that flares about 2.5 billion cubic feet (bcf) of associated gas, yearly with an annual market value of $2.5 billion (N3.8 trillion). For over five decades (1958-2010), the country has been suffering from such stupendous economic waste through gas flaring. Apart from the economic waste, gas flaring also constitutes air, water and noise pollutions. It emits noxious greenhouse gases such as carbon monoxide (CO), carbon dioxide (CO_2), methane ($H4_2$), suspended particulate matter (spm), nitrogen oxides (NO_2), sulfur oxides (SO_2), ozone (O), and so on, into the innocent air we breathe. It is argued that gas flaring depletes the ozone layer continually, thereby using up oxygen at a staggering rate; causing an artificial imbalance between production and consumption of oxygen. Oil-bearing communities in the Niger Delta are therefore susceptible to chronic health risks, loss of ecosystem, vegetation and deterioration of material (infrastructure). Why gas re-injection policies succeed in other oil-producing countries like Norway, Britain, Venezuela, Brazil, Algeria, and so on, and fail in Nigeria, continuously in spite of the emergence of DA? Is the failure of gas re-injection policies in Nigeria a function of non-appreciation of indigenous technological expertise in the policy-making and implementation processes? Thus, the article specifically seeks: ***(i)*** *the availability of indigenous technological expertise in gas re-injection policy-making in Nigeria; and* ***(ii)*** *the extent of consultation and utilization of indigenous technological expertise in gas re-injection policy-making in Nigeria. Using the Marxist Theory of the Neocolonial State as the framework of analysis which is synergic with the methodology of the study i.e. the observation and interview methods of data collection - a hybrid of quantitative and qualitative research methods, the article argues thus: Until gas re-injection policy-makers' heavy reliance on Petrobusinesses for technical inputs in regulatory policy-making is consciously checked through proper consultation/effective utilization of patriotic indigenous expertise, gas re-injection policies will continue to fail and DA cannot triumph in Nigeria. The article recommends the employment of Development Administration Approach (DAA) as the most super-ordinate solution to strengthen gas re-injection policy-making and implementation in Nigeria.*

Introduction

Nigeria has been facing insurmountable challenges of Development Administration (DA) right from her attainment of political independence in 1960. As a by-product of an oil-producing colonial economy, the postcolonial political leadership of Nigeria was faced amongst other development problems, the quandary of natural resource governance and environmental management. This underscores the perennial scourge of environmental degradation as a result of petroleum prospecting activities in the Niger Delta. Generally, Nigeria like other post-colonial states and/or Third World countries was full of hopes to start a new beginning at independence by tackling most of the problems associated with former colonial territories such as technological backwardness, illiteracy, poverty, cultural disorientation, environmental pollution, social disorganization, political instability, and so on, through a state-interventionist development-engineering strategy.

Earlier, Governments of a number of post-colonial and/or Third World countries such as Ghana, Nigeria, Kenya, Algeria, Angola, India, Libya, Venezuela, Brazil, and so on, were confronted with similar inadequacies in finding solutions to the foregoing problems. Some of such common inadequacies of post-colonial states include: (i) lack of strong indigenous productive forces (technology and capital) to exploit their natural resource base in countries like Nigeria with high rate of natural resources, (ii) lack of natural resource base in some countries, (iii) lack of professional and skilled manpower, (iv) lack of institutions for manpower development. This underscores the weak economic and manpower foundations laid by the colonial masters at the time of political independence in their colonies. The colonialists did this through their mono-culture economy of production of raw materials for export and attendant disarticulation of indigenous productive forces and accumulation of 'surplus value' in the course of exploitation of natural resources through cheap labour.

Development Administration, therefore, was perceived out of the realization that the traditional public administrative systems and institutions that emanated from the colonial governments were not designed to respond to the problems of socio-economic development in the host countries. As Ake (1981:141-143) aptly contended that the colonial governments were not really interested in development and did not talk very much about it. And that rather, they were interested in keeping law and order in maintaining the politico-economic conditions for the exploitation of the colonies. Ake (1981:141-142) further explained that the idea of development is relatively recent in Africa…that it became trendy after the early 1960s when many African countries had become politically independent. He concluded that since then African leaders have had some measure of obsession for development, based on the conviction that there is a link between the underdevelopment of their countries and the most fundamental problems that plague their states, such as poverty, ignorance, technological backwardness, cultural deprivation, short-life expectancy, social disorganization,

and high rate of political instability. Thus, development of their countries is ostensibly seen by African leaders as those of other Third Word countries as the necessary condition, if not the sufficient condition for dealing with the foregoing problems amongst others. A fundamental future of development is that there is no fixed point at which a people, region and/or country passes from a state of underdevelopment to a state of development. The relative condition of development, rather, is comparative and ever dynamic. It changes according to what is needed, what is possible, and what is desired (Gant 1979:7; Weidner 1962:99; and Ibodje 1998:153).

After more than fifty years of the emergence of development administration in post-colonial Nigerian state, our economic foundation remains weak, its fledgling indigenous productive forces are arguably underutilized and the existing mode of production is comparatively non-development-oriented and uninspiring. It is, therefore, worrisome as successive political leadership of the post-colonial Nigerian state whose aspiration at independence was ostensibly to make up the inadequacies of the imperial-motif-driven colonial economies through a development administration approach, have been tinkering with gas re-injection policy-making and implementation since 1969, without success. Meanwhile, gas re-injection policies have succeeded in other oil-producing countries like Norway, Britain, Venezuela, Algeria, and so on. In other words, why gas re-injection policies succeed in other oil-producing countries through DA and fail in Nigeria, continually in spite of the emergence of DA? Can DA succeed without the development and utilization of indigenous productive forces? To put it straight as a guide to our enquiry on *Development Administration and Gas re-injection Policy-making in Nigeria:* **Is the failure of gas re-injection policies in Nigeria a function of non-appreciation of indigenous technological expertise in the policy-making and implementation processes?** In this article, consequently, we shall attempt to establish a link amongst development administration, appreciation of indigenous productive forces and effective environmental regulatory policy-making in a post-colonial state. This article, therefore, specifically seeks:

(i) The availability of indigenous technological expertise in gas re-injection policy-making in Nigeria; and

(ii) The extent of consultation and utilization of indigenous technological expertise in gas re-injection policy-making in Nigeria.

This will be done within the context of the Nigerian neocolonial production system theoretical perspective.

Operationalizing Key Concepts

The key concepts in this article include: **(i)** *Development Administration*:- In this article, *Development Administration* refers to a special administrative strategy other than the normal bureaucratic model aimed at strengthening the machinery of government through effective public policies to specifically stimulate

development in less-developed countries in the World. **(ii)** *Gas Re-injection Policy-making*:- In this study, *gas re-injection policy-making* refers to how regulatory legislations or laws and guidelines or regulations ostensibly to stop gas flaring are made and put into practice in Nigeria. **(iii)** *Neo-colonial State*:- This is used in this article to depict an independent country that still depends largely on the international capitalist system for technology and capital for survival. **(iv)** *Post-colonial State*:- In this article, *Post-colonial State* denotes the era of Nigeria after the attainment of political independence in 1960. **(v)** *Disarticulation:*- This refers to the displacement of indigenous labour and capital by international capitalism through petroleum prospecting by multinational oil companies operating in Nigeria. **(vi)** *Prismatic Society*:- Refers to developing countries which are located in between traditional and industrialized societies. **(vii)** *Petrobusinesses*:- In this article, *Petrobusinesses* stand for all multinational oil companies operating in Nigeria.

Conceptualizing Development Administration

The concept of *Development Administration* (DA) is pivotal to this study and as such, its background, meaning and components must be clearly understood if one is to appreciate the object of this article. The concept of DA was first coined and brought to the limelight of social science literature between 1955 and 1956 (Gant 1979:19). This, according to a United Nations Publication on *Science and Technology for Development* (As Quoted in Ibodje 1998:154), was the period immediately following the end of the World War II that witnessed certain events, including very dramatic social and economic changes in which no economy was self-adjusting and having the 'invisible hand' strong enough to guide its system of economic activities towards achieving desired goals. The acquisition of new management technologies in terms of appropriate public policy-making and implementation through a special state-interventionist development strategy became imperative in such states emerging from colonial enclaves.

According to Gant (1979:18-24), *Development Administration* refers to the complex of agencies, management systems and processes which have become necessary to strengthen all levels of government activities in order to gear them towards the attainment of the planned goals of a given nation-state. Implicit in the foregoing definition is that DA is a special design of administration with specific focus on the support and management of development and transformation. This special model of administration can be differentiated from the traditional public administration system of the Weberian type which has a major orientation towards the management of law and order (Ibodje, 1998:157). In the same token, the Comparative Administrative Group (CAG), a small group of political scientists and students of public administration (As Quoted in Gant, 1979:28), organized itself between 1960 – 1961 under the auspices of the American Society for Public Administration (ASPA), also emerged out of the concern about the poor performance of and inadequate results of the programmes of technical assistance for public administration in less-developed countries. The major concern of the

CAG was how to facilitate development-oriented administration in the management of public affairs in the developing countries. Prominent amongst members of the CAG include: Fred W. Riggs, Dwight Waldo, Edward W. Weidner, Milton J. Esman, John D. Montgomery, Ralph Braibanti, Bertram M. Gross, Richard W. Gable and Joseph Lapalombara (Ibodje, 1998:159).

Gant (1979:3-6), in his popular work, *Development Administration,* captures the essence of DA in newly independent countries as thus:

> The period of fifteen years following the end of the World War II witnessed the attainment of political independence generated new hopes of improved political, social and economic life among citizens of these nations. High in the expectations of citizens of these countries were the widening of opportunities for self expression and advancement. All these were expected as fruits of independence. And governments of these new and underdeveloped nations were expected to bring these hopes into reality through the instrumentality of their bureaucracies, administrative agencies and processes.

The two broad components of DA, therefore, are: One, DA is about making specific policies, designing appropriate programmes and/or projects and implementing same effectively towards creating and increasing opportunities for the citizenry as it affects their yearnings and aspirations in various aspects of life. Two, DA is about how to strengthen the administrative machinery of government in order to enable it meet the demands of development (See Ibodje, 1998:159 and Gant, 1979: 20-28 for details). The first broad area of DA implies the involvement of a systematic identification of the problems of the people e.g. poverty, illiteracy, environmental pollution, health, shelter, transportation, communication, energy, portable water, and so on, as well as discovering existing inadequacies in their various spheres of life, before initiating well researched and planned programmes and/or projects through relevant policies aimed at effecting positive changes in society. The implication of the second area of DA is the constitution of different policy strategies that can be adopted to strengthen the administrative machinery of government in development engineering.

As the name implies, therefore, *Development Administration* is used in the context of this article to depict a special model of governmental administration aimed at facilitating development engineering in newly independent and less-developed countries through a process of tangible policy-making and implementation, as well as the establishment of strong and reliable mission-specific institutions.

Theoretical Perspective

A good synergy between a selected theoretical framework and the methodology for a study enhances a study in tackling/pursuing its research question(s) and objectives. The need for a coherent theory for the explanation of the relationship

between variables and a clear presentation of the methodology for a study, therefore, is imperative for any scientific research.

In this study of "*Development Administration and Gas Re-injection Policy-making in Nigeria*", we adopt as theoretical framework of analysis, the *'Marxist Theory of the Neocolonial State'*. The choice of the *Marxist Theory of the Neocolonial State* by the researcher amongst other competing theories like the *Theory of Prismatic Society, Systems Theory,* the *Elite Theory,* the *Group Theory,* and so on, is based on two key considerations. One, that virtually most short-comings of post-colonial states in the development of indigenous productive forces can be better understood through the *Marxist Theory of the Neocolonial State;* and it provides more insights through its main tenets for explaining the issues addressed in this article e.g. the relationship amongst development administration, indigenous productive forces and gas re-injection policy-making in the Nigerian neocolonial state. Two, the *Marxist Theory of the Neocolonial State* has a better synergy with the methodology of this study .i.e. the observation and interview methods of data collection which is a hybrid of quantitative and qualitative research methods.

Most of the other contending theories above are useful but basically inadequate for this study for various reasons. For instance, the *Theory of Prismatic Society* (Riggs, 1964) contended that in any society, there are various sectors, but all the other sectors rely on the administrative (*Sala)* sector for survival, as it applies to a prismatic society (developing countries) which he located in between industrialized and traditional societies. Fred Riggs (1964) used the Asian word *sala* which means 'office' to propound the *Theory of Prismatic Society*. The theory, through the *Sala Administration Model* identifies three types of societies, viz: (i) Industrialized or modern societies (Refracted), (ii) Traditional or primitive societies (Fused), and (iii) Prismatic or developing societies (*Sala*). Riggs further explained that while the industrialized society is operated on the principle of universality, the traditional society is operated on the principle of particularism. Again, impersonality dominates in the industrialized society while the traditional society is dominated by personality i.e. rules and regulations are bent for some individuals in the traditional society whereas in the industrialized society, the principles, rules and regulations are supreme and could not be bent for any individual no matter his/her status. The industrialized society, according to the theory, is achievement-oriented whilst the traditional society is ascription-oriented. Objective principles reign in the industrialized society while subjectivity holds sway in the traditional society. The theory, thus, contended that the prismatic society (developing countries) which is standing between the traditional and industrialized societies has a fused base which refers to its traditional trait while at its expansion it is refracted, leaning to the industrialized society. In other words, the theory sees developing countries (Prismatic society) as containing the elements of both traditional and industrialized societies while they are in their pure forms. Three main features of prismatic society, according to the theory are: (i) heterogeneity i.e. having traces of fused and refracted values and ways of life –

the economic system is both the bargaining and price-tag system; and a modern city with sophisticated intellectuals and high-tech offices exists side-by-side with rural villages and slums; (ii) overlapping i.e. a situation whereby structures are juxtaposed – at some levels it is traditional while on the next level it becomes industrial, and vice versa; elections are rigged and it is referred to democracy; judges are bought and it is called justice; gas flare regulatory policies exist, yet, petrobusinesses flare gas continuously; examination malpractices occur outright during university matriculation examinations (UME) and best performed candidates are celebrated; we have refineries, hitherto, crude oil is refined abroad, and so on; (iii) formalism i.e. the formal rules which are of the industrialized society such as arms of government, viz: legislature, executive and judiciary exist but they are operated in an informal manner – procedures for punishment of offenders are adjusted to suit tradition while the formal rules are operated in a purely traditional way. Thus, corruption is encouraged – a client may pay an official to perform his 'duty' or to neglect same e.g. policemen, NEPA officials, tax collectors, and so on.

The *theory of prismatic society* amongst other weaknesses: (i) over simplifies the analysis of the three types of society thereby taking too many things for granted i.e. what the theory describes as traditional society may be functional as regards the aims and objects of that society and at the same time is a function of the socioeconomic and cultural milieus surrounding the society; (ii) the theory was extreme in its assumption that prismatic societies are found on developing countries, only, whilst traits of underdevelopment (slumps) are found also in the industrialized societies; (iii) the theory was biased for postulating the industrialized society (developed countries) as the good one while the traditional society which it identified as forming the fused base of developing countries as bad, whereas, it is of a fundamental truth that all countries at a time where traditional in nature and graduated through developing (prismatic) to developed (industrialized) country. Thus, the *theory of prismatic society* is generally criticized as being biased against the traditional and developing societies and as such, cannot explain the debilitating role of the developed (industrialized) countries in the disarticulation of the indigenous productive forces of developing (prismatic) countries through colonialism, neocolonialism and globalization. The theory lost sight of the existing lopsided center-periphery relationship between developed and developing countries in the international capitalist system. As Rodney (1982: Cover) aptly argued that "African development is possible only on the basis of a radical break with the international capitalist system…the principle agency of underdevelopment of Africa…"

Again, the *Systems Theory* (Easton, 1957:383-400) sees policy as a product of the political system and the output is perceived as the result of different environmental variables responded to by the political system. The central assumption of the theory is that public policy-makers essentially derives policy-inputs from the public as demands and the political system functions as a

conversion process for public inputs to outputs which eventually become public policies. The theory's assumptions of public policies generally emanating from inputs from the public and public policies as responses to these inputs may be misleading. The central issues of struggles and conflicts amongst the classes and groups are never brought to light. The *Systems Theory* therefore is inadequate in explaining the domineering influence of organized groups such as petrobusinesses and classes other than the public, struggling to capture the gas reinjection policy-making and implementation processes. As Dye (1972:267) rightly argued that, "the supposition that public preferences affect public policy is a myth…" It is of a truth that, in Nigeria, governments are seen in molding public opinion in support of the policies they espouse rather than sourcing policy-inputs from the public. Thus, it is not the public input that is converted, but public policies seem to be the outcome of the contestations, characteristics, interrelations, values, bargaining and preferences of the organized interests within the political system itself. If public policies actually emanated from the public inputs, their implementation would have been less problematic. The *Systems Theory* therefore has not answered a number of questions, viz: what is the actual relationship between the organized groups like petrobusinesses and policy-makers of a neocolonial state? How does the technical opinion of petrobusinesses affect the content of gas re-injection policies in Nigeria? How the content of a public policy affects its implementation? Thus, the *Marxist Theory of the Neocolonial State* provides answers to the foregoing questions emanating from the inadequacies of the *Systems Theory* as we shall explain, later.

Also, the *Elite Theory* (Parry, 1969:36-55) contended that public policy is a reflection of the values and preferences of the ruling elite rather than the demands and pressures of the masses. The theory assumed that it is the ruling elite that make public policies while the career public officers and public officials carry out the elite policy-decisions. The *Elite Theory* was realistic in its explanation on the source of public policies by tracing it to the elite rather than the masses which the systems theory assumed. However, the assumption of the *Elite Theory* that the elite consisting of all those in control of strategic aspects of society influence the political system and its policies may be an over-generalization of the fact. The political system practically operates as a clique of harmonized interests. It is not open for influence by those whose interests are not harmonized into the whole, no matter how leading you are in your profession or constituency. The *Elite Theory* does not also explain how the elite acquire its dominance in the polity. The conflicts and contestations in society are underplayed, yet they are the motive forces for elite circulation and/or demise. The theory therefore cannot also adequately explain the prevailing undercurrents from outside the ruling elite that actually control the gas reinjection policy-making and implementation processes in a neocolonial oil-producing state like Nigeria, with their monopoly in human, financial and material resources (including science and technology). This, the *Marxist Theory of the Neocolonial State* can explain through some of its key assumptions that, "a neocolonial state is an instrument for capital accumulation, a

direct instrument for class formation, and rentier and/or essentially extractive in nature (Ekekwe, 1986:12; Maliband, 1977:109; Nwoke and Omoweh, 2006:30; and Ezeani, 2008:2-3).

The *Group Theory (*Eckstein and David 1963:391), also assumed that the central fact in politics is the interaction amongst groups and the interaction forms the pivot of the governmental process. The group theorists contended that the interaction, struggle and competition amongst the various interest groups, when articulated through the conversion process results in public policies. A particular public policy therefore, at any time is the equilibrium or the compromises reached in the group struggle. The *Group Theory* also ended only in the exposition of the role of interest groups in the public policy-making process. It did not explain the basis of inequalities and the effect of inequalities amongst contending groups in terms of productive capacity in the struggle to influence public policies in their favour. The theory therefore is not capable of revealing the domineering influence of organized groups like Petrobusinesses on the gas-flare regulatory policy-making and implementation processes through their monopolistic and strong productive forces which oil-bearing communities are apparently lacking. Therefore, gas reinjection policies in Nigeria's Oil and Gas Industry cannot be the compromises reached in the struggle of contending groups since a major stakeholder group (oil-bearing communities) does not possess the required capabilities, unorganized and have little or no access to gas flare regulatory policy-making structures to make useful inputs in the policy-making process. Thus, the *Prismatic Society, Systems, Elite* and *Group theories* are inadequate in explaining how gas re-injection policies are made in Nigeria, why they are successfully implemented in other Third World oil-producing countries, and why they have not been implemented in Nigeria over the years.

The *Marxist Theory of the Neocolonial State* provides explanation for the interconnectedness between domestic productive capacity of stakeholders in a production system and the struggle amongst contending interest groups in influencing regulatory policy-making in a neocolonial economy. In this theory, therefore, the Classical Marxist Theory of the State has been further developed to reflect on the peculiarities of the neocolonial state (Alavi, 1973:146-147; and Ekekwe, 1986:12). As Ekekwe (1986:12) aptly explained:

> The difference between the two forms of capitalist state is thus: that whereas the state in the advanced capitalist formations functions to maintain the economic and social relations under which bourgeois accumulation takes place, in the periphery of capitalism, factors which have to do with the level of development of the productive forces make the state through its several institutions and apparatuses, a direct instrument for accumulation for the dominant class or its element.

The foregoing peculiar attributes of the neocolonial state underscore the imperialist strategy of the colonial government in Nigeria which in its bid to actualize its economic interests discouraged the growth of indigenous productive forces thereby taking pleasure in having the monopoly of technological know-how and capital flow. This they consummated by denying African businesses of bank loans, contract awards and other business incentives (Ezeani, 2008:4). This explains the weak indigenous capitalist class incapable of establishing hegemony over the new state at independence, and also the *raison d'etre* for the use of the Nigerian neocolonial state as the main instrument of economic investment and economic development. Ezeani (2008:4) further argued thus:

> Besides, the new indigenous bourgeoisie that inherited control over the neocolonial state and its apparatuses had a very weak economic base, and hence relied on the control for its own capital accumulation. As a result, the state and state apparatuses such as public corporations and parastatals became the main instruments for the formation of an indigenous capitalist class.

The Nigerian neocolonial state, therefore, functions primarily both as a major instrument of capital accumulation and direct instrument of class formation/domination for the petit bourgeoisie and their foreign collaborators (Petrobusinesses), not as the supposed instrument of development administration for domestic development engineering. Thus, policy-makers and implementers in Nigeria's oil industry are caught in the web of petrobusinesses' fantasy of technical advice to stop gas flaring in the oil-rich Niger Delta region. This explains the disarticulation of indigenous productive forces and attendant domination of petrobusinesses' inputs in gas re-injection policy-making as against indigenous technological expertise, which manifests weak political will of the indigenous ruling class, hence the perpetual failure of associated gas re-injection policies in Nigeria.

Consequently, the *Marxist Theory of the Neocolonial State* is very relevant to understanding and explaining the crisis of gas re-injection policy-making and implementation regimes in Nigeria. In applying the theory, successful gas re-injection policy-making as fundamental to Development Administration, is conditioned by the following independent variables:

1. The atypical nature and role of the neocolonial state of Nigeria as an instrument for capital accumulation. This underlines why the indigenous capitalist class represented by the ruling class (policy-makers), top government functionaries (policy-implementers) and collaborators (officials of petrobusinesses) use the gas re-injection policy-making institutions and regulatory agencies as means for accretion of wealth through symbolic stakeholder forums, petrobusiness-dominated technical committees and attendant metaphoric gas re-injection legislations.

2. The class character of the Nigerian state. As against the argument of liberal scholars, the Nigerian state, like many other capitalist states is not class neutral, nonetheless engrossed in steady class struggles intra and inter the various institutional groups. It is the character of this existing class conflicts in Nigeria's downstream sector that has come to define the content and context of the gas policy-making regimes and the general crisis in natural resource governance and environmental management.

3. The Nigerian neocolonial state as rentier and extractive in nature. This highlights the fact that in spite of the political leaders' obsession for development and so much oil revenues received since Nigeria's attainment of political independence, the Nigerian state has invested very little in the development of indigenous productive forces and the Niger Delta oil-rich environment. Thus, always relying for financial and technical solutions from the same petrobusinesses the Nigerian state is expected to regulate. As a result, unable to take drastic actions on regulatory issues. This also explains the continuous failure of gas flare regulatory policies in Nigeria.

The failure of the *Associated Gas Reinjection Policy* and attendant scale of environmental degradation, disease and attendant high mortality rate of human beings, plants, animals and other bodies as well as the insurgency in the Niger Delta petro-environment can therefore be located and explained from our theoretical perspective, as fundamentally the failure of policy-makers to appreciate indigenous productive forces (technological expertise and capital development) in the formulation and implementation of gas re-injection policies in Nigeria that will threaten the status quo. The theory impliedly sees development administrative system as interplay of indigenous technology, strong local economy, political stability and patriotism to one's country. An overlook of one of these interrelated factors portends failure of the development administrative system. Gas re-injection policy-making focusing wholly on self-enrichment/capital accumulation for the petit-bourgeoisie and petrobusinesses, and technological considerations of the dominant class in the oil industry is bound to fail.

It is against the above backdrop of the nature of the Nigerian neocolonial state that we can properly explain the common problems of gas re-injection policy-making and implementation in Nigeria, such as, weak consultation/underutilization of indigenous technological expertise, petrobusiness domination of technical policy inputs, government's failure to fund counter-part funding of the erection of gas re-injection facilities, proliferation of regulatory bodies, corruption, incessant failure of gas flare-out deadlines, and so on, resulting in failed Development Administration. This is illustrated clearly in figure 1.

Attributes of Neocolonial State

1. Instrument for capital Accumulation

Corruption and attendant accretion of wealth e.g. (i) policy-makers ignored patriotic indigenous expert opinions for fingered inputs of petrobusinesses resulting to wrong policy options with monetary fines; (ii) regulatory bodies are proliferated with interwoven functions thereby brewing conflicts among agencies and also encourages compromise of regulatory standards for self-enrichment.

2. Instrument for class domination

(i) Adoption of gas re-injection policy options favorable to the dominant class (the ruling class and petrobusinesses) as against the interest of oil-bearing communities and the Niger Delta environment; (ii) Constitution of technical committees favorable to the dominant class (agents of the ruling class and petrobusiness officials) as against patriotic indigenous experts, vulnerable oil-bearing people, etc; (iii)

Effects on gas re-injection policy-making regimes

1. Weak consultation and underutilization of indigenous technological expertise

2. Reliance on the technical inputs of petrobusinesses for gas policy-making

3. Incessant government failure in counterpart-funding of gas re-injection facilities

4. Proliferation of regulatory Agencies

5. Corruption in technical committees, policy-making

Crisis of Gas Reinjection Policy-making and Implementation Regimes, resultant environmental carnage in the oil-rich Niger Delta Region with adverse effects on the socioeconomic conditions of oil-bearing communities and attendant failure of Development Administration in Nigeria.

Figure 1: A Model Explaining the Adverse Effect of the Neocolonial Character of the Outcome of Gas Sub-Sector Policies Nigerian State on Gas Re-injection Policy-making and Implementation Regimes

Synopsis of Gas Flaring and Re-injection Policy-making in Postcolonial Nigeria

Nigeria is the second highest gas flaring country in the World. About 2.5 billion cubic feet (bcf) of associated gas with an annual market value of $2.5 billion is flared in Nigeria, every year. For over five decades (1958-2010), the country has been suffering from such stupendous economic waste through associated gas flaring. Associated gas flaring constitutes air, water and noise pollutions. It emits noxious greenhouse gases such as carbon monoxide (CO), carbon dioxide (CO_2), methane ($H4_2$), suspended particulate matter (spm), nitrogen oxides (NO_2), sulfur oxides (SO_2), ozone (O), and so on, into the innocent air we breathe. It is argued that gas flaring depletes the ozone layer continually, thereby using up oxygen at a staggering rate; causing an artificial imbalance between production and consumption of oxygen. Oil-bearing communities in the Niger Delta are therefore susceptible to chronic health risks, loss of ecosystem, vegetation and deterioration of material (infrastructure). Since 1969, the postcolonial Nigerian government has been making associated gas re-injection policies to stop the flaring of gas, without success. None of these policies has been successfully implemented as exacerbated by the failure of the three popular gas flare-out deadlines (1984, 2004 and 2008). As earlier noted, associated gas re-injection policies have succeeded in other oil-producing countries like Norway, Venezuela, Britain, Brazil, Algeria, and so on.

Extant literature pointed to a link between technology-intensive policy failures and non-subjection of policy goals/alternatives to scientific and technological gradations (Kuehn and Porter, 1981:19; Hagelin, 2010:3; American Association for the Advancement of Science, 1975:810-814; Ellul, 1964:6; Eseduwo, 2012:307, and so on). Thus, to appreciate the extent of the gas re-injection policy-making crisis in Nigeria, it is imperative to first of all assess the manpower disposition of the environmental sector in three Niger Delta states (Bayelsa, Delta and Rivers) where there is constant gas flaring since 1958. This will enable us find out if Nigeria lacks the required scientific capacity to make and implement gas re-injection policies or it is the failure of policy-makers to properly consult and/or utilize indigenous expert advice in the process of gas re-injection policy-making and implementation.

Manpower Disposition of the Environmental Sector in the Niger Delta

To confirm the manpower disposition of the Environmental sector in the three Niger Delta States under review on the availability of indigenous experts in the areas of science and technology, the manpower disposition of the Federal/State Ministries of Environment in Bayelsa, Delta and Rivers States were assessed. Thus, staff nominal rolls of the Federal/State Ministries of Environment in Bayelsa, Delta, and Rivers States were observed. It was discovered from the staff nominal rolls that the prominent professional departments in Nigeria's Ministry of Environment both at federal and state levels include; (i) Ecology, (ii) Forestry, (iii) Environmental Conservation, (iv) Petroleum & Pollution, and (v) Waste Management & Sanitation.

It was observed also from the staff nominal rolls that the above professional departments are staffed with various scientists (professionals) and these include; Chemical Engineers, Petroleum Engineers, Petrochemical Engineers, Geologists, Biologists, Foresters, Ecologists, Environmental Sanitation Officers, Health Superintendents, Laboratory Technicians, Public Health Superintendents, Technologists, and other scientific Officers. The staff nominal rolls observed also show that professionals in the professional departments possessed educational/professional qualifications ranging from Higher National Diploma (HND), Bachelor of Science (B.Sc), Bachelor of Technology (B.Tech) Degrees, Post-Graduate Diploma (PGD), Master of Science (M.Sc) to Doctor of Philosophy (Ph.D) Degrees in the relevant disciplines (See 2009/2010 Staff Nominal Rolls of Federal/State Ministries of Environment, Bayelsa, Delta and Rivers States for details). There are also other departments in the Federal/State Ministries of Environment. They are categorized as service-assist departments (Non-Scientists) and these include: (i) Administration, (ii) Finance & Supply, and (iii) Planning, Research & Statistics. These departments assist the policy-making organ (The Honourable Commissioner and the Permanent Secretary) for the day-to-day administration of the Ministry. They provide the resources (human and material) for the professional departments towards the implementation of environmental policies of Government. In sum, the professional departments of the three Niger Delta States' Ministry of Environment under study are relatively better staffed than the Federal Ministry of Environment in these States. It was observed that the Federal Ministry of Environment in the three Niger Delta States under study are poorly staffed. See Tables 1-5 below for the results of the manpower assessment.

Table 1: Manpower Disposition of Bayelsa State Ministry of Environment

S/No	CADRE	MANPOWER DISPOSITION			
		Field of Study	No. of Graduate Staff	No. of Non-Graduate Staff	Total Staff Strength
1.	Non-Science & Tech. Cadres (Non-Specialist Depts)	a. Law	1	-	1
		b. Bus. Admin.	1	-	1
		c. Mgt.	1	-	1
		d. Pub. Admin.	2	-	2
		e. Accts	2	3	5
		f. Comm. Dev.	-	3	3
		g. Econs.	1	-	1
		h. Comp. Analyst	2	-	2
		i. Others (Clerical,Typists, etc	-	38	38
		Sub-Totals	**10**	**44**	**54**
2.	Science & Tech. Cadres (Specialist Depts)	a. Civil Engr.	3	-	3
		b. Pet. Chem. Engr.	4	-	4
		c. Technologist	2	1	3
		d. Biology	3	-	3
		e. Geologist	5	-	5
		f. Chemestry	8	-	8
		g. Envr. Science	4	-	4
		h. Pharmacy	1	-	1
		i. Chemical Engr.	4	-	4
		j. Public Health	19	11	30

SOURCES: Staff Nominal Roll of Bayelsa State Ministry of Environment (2009/2010) and Eseduwo Field Study (2010

Table 2: Manpower Disposition of Delta State Ministry of Environment

S/No	CADRE	MANPOWER DISPOSITION			
		Field of Study	**No. of Graduate Staff**	**No. of Non-Graduate Staff**	**Total Staff Strength**
1.	**Non-Science & Tech. Cadres (Non-Specialist Depts)**	a. Law	2	-	2
		b. Pol. Science	1	-	1
		c. Mgt.	3	-	3
		d. Pub. Admin.	4	-	4
		e. Accts	3	6	9
		f. Comm. Dev.	2	5	7
		g. Econs.	3	-	3
		h. Comp. Analyst	3	-	3
		i. Others (Clerical,Typists, etc	-	40	40
		Sub-Totals	**21**	**51**	**72**
2.	**Science & Tech. Cadres (Specialist Depts)**	a. Civil Engr.	5	-	5
		b. Pet. Chem. Engr.	6	-	6
		c. Technologist	3	4	7
		d. Biology	5	-	5
		e. Geologist	7	-	7
		f. Chemestry	10	-	10
		g. Envr. Science	6	-	6
		h. Pharmacy	3	-	3
		i. Chemical Engr.	6	-	6
		j. Public Health	22	15	37

SOURCES: Staff Nominal Roll of Delta State Ministry of Environment (2009/2010) and Eseduwo Field Study (2010).

Table 3: Manpower Disposition of Rivers State Ministry of Environment

S/No	CADRE	MANPOWER DISPOSITION			
		Field of Study	**No. of Graduate Staff**	**No. of Non-Graduate Staff**	**Total Staff Strength**
1.	**Non-Science & Tech. Cadres (Non-Specialist Depts)**	a. Law	2	-	2
		b. Sociology	4	-	4
		c. Political Science	3	-	3
		d. Pub. Admin.	5	-	5
		e. Accts	3	6	9
		f. Comm. Dev.	4	6	10
		g. Banking & Finance	3	-	3
		h. Comp. Analyst	5	-	5
		i. Others (Clerical,Typists, etc	-	45	45
		Sub-Totals	**29**	**57**	**86**
2.	**Science & Tech. Cadres (Specialist Depts)**	a. Civil Engr.	5	-	5
		b. Pet. Chem. Engr.	8	-	8
		c. Technologist	6	3	9
		d. Biology	5	-	5
		e. Geologist	9	-	9
		f. Chemestry	13	-	13
		g. Envr. Science	9	-	9
		h. Pharmacy	2	-	2

SOURCES: Staff Nominal Roll of Bayelsa State Ministry of Environment (2009/2010) and Eseduwo Field Study (2010).

Table 4: Manpower Disposition of Federal Ministries of Environment in Bayelsa, Delta and Rivers States

S/NO	NAME OF STATE	MANPOWER DISPOSITION (FEDERAL MIN. OF ENVIRONMENT)		
		No. of professional staff (Scientists)	No. of Non-professional staff (Non-scientists)	Total Staff Strength
1.	Bayelsa	2 (40%)	3 (60%)	5
2.	Delta	10 (37%)	17 (63%)	27
3.	Rivers	15 (44%)	19 (56%)	34

SOURCES: Staff Nominal Rolls of Federal Ministries of Environment, Bayelsa, Delta and Rivers States (2009/2010) and Eseduwo Field Study (2010).

Table 5: Summary of Manpower Disposition of State Ministries of Environment in Bayelsa, Delta and Rivers States

S/NO	NAME OF STATE	MANPOWER DISPOSITION		
		No. of professional staff (Scientists)	No. of Non-professional staff (Non-scientists)	Total Staff Strength
1.	Bayelsa	78 (54.2%)	66 (45.8%)	144
2.	Delta	132 (64.7%)	72 (35.3%)	204
3.	Rivers	141 (62%)	86 (38%)	227

SOURCES: Staff Nominal Rolls of State Ministries of Environment, Bayelsa, Delta and Rivers States (2009/2010) and Eseduwo Field Study (2010).

Table 4 and 5 show the data collected from the Federal/State Ministries of Environment in three Niger Delta States where associated gas has been flared for more than five decades by the Petrobusinesses. It is observed from table 5 that 54.2% of the staff of the Bayelsa State Ministry of Environment are professionals (scientists) and 45.8% are of the non-professional departments. Whilst, in the Federal Ministry of Environment, Bayelsa State, only 40% of the staff are professionals (scientists) and 60% are non-scientists (Table 4). In the Delta State Ministry of Environment, 64.7% are professionals and 35.3% are non-professionals (Table 5). While in the Federal Ministry of Environment, Delta State, 37% are professionals and 63% are non-professionals (Table 4). Also, 62% of

the Staff of the Rivers State Ministry of Environment is made up of professionals (scientists) and 38% are non-professionals (Table 5). Also in Rivers State, only 44% of the staff of the Federal Ministry of Environment are professionals while 56% are non-professionals (Table 4). The data in Table 4 above imply that the Federal Ministry of Environment is weak at the regional and state levels. It is also evident from the data that the States Ministry of Environment in the three states of Niger Delta under study did not have some of the required professional manpower to render scientific and technological advice on associated gas re-injection policy-making and implementation in Nigeria. Some of such indigenous experts include corrosion engineers, construction engineers, physicists, and so on. The need to consult and utilize indigenous expertise beyond the Staff of Government Ministries/Departments/Agencies in associated gas re-injection policy-making is therefore imperative. In the contrary, the States Ministry of Environment, especially in the three states under study (Bayelsa, Delta and Rivers) are making little or no input in the formulation and implementation of the Associated Gas Re-injection Policies in Nigeria. Their inputs, according to the Directors interviewed, end at the jamboree of 'stakeholder workshops'. We now turn to the patterns of consultation and utilization of indigenous expertise in gas re-injection policy-making in Nigeria.

Patterns of Consultation of Expertise on Gas Policy-making in Nigeria

On the issue of consultation and utilization of indigenous scientific and technological advice in the formulation and implementation of gas re-injection policies in Nigeria, relevant official documents including invitations for stakeholder meetings/workshops/consultative forums, constitution of committees/reports/ communiqués, memoranda/minutes from the Federal/State Ministries of Environment and other relevant government agencies were observed. Responses were obtained also from the Federal Ministry of Petroleum Resources, the Federal Ministry of Science and technology, the Federal/State Ministries of Environment in Bayelsa, Delta and Rivers States, the Nigerian Society of Engineers, Bayelsa, Delta and Rivers States Chapters, and Science/Technology Departments in the Niger Delta University (NDU), Wilberforce Island – Amassoma, the University of Science & Technology (UST), Nkpolu-Port Harcourt, and the Delta State University (DELSU), Abraka. The empirical data on tables 6 – 13 therefore represent the fact of whether indigenous scientific and technological advice were properly consulted and utilized or not in gas re-injection policy-making and implementation in Nigeria from 1960 – 2010. We now present and analyze the data from documentary evidence and personal interviews.

From the official documents observed in the Federal/State Ministries of Environment and other relevant government agencies on the issue of consultation/utilization of indigenous scientific and technological advice in Associated Gas Re-injection Policy-making and Implementation in Nigeria, it was discovered that the federal government of Nigeria made some consultative efforts in the above regard through the Federal Ministry of Environment and the

Federal Ministry of Petroleum Resources. The most recent efforts include:

1. The National Forum for Monitoring of Natural Gas Utilization and Implementation of related projects in Nigeria (2001);
2. The Consultative Forum with Captains of Oil & Gas Industry and other Stakeholders in Nigeria (2004);
3. The Nigeria Flare Reduction Committee (NFRC) (2007);
4. Memorandum from the Federal Ministry of Environment to the Federal executive Council on Implementation of Government Policy on Gas Utilization and Elimination of gas flaring (2007);
5. Brief on Gas Flare-Down by the Federal Ministry of Environment (2007);
6. First National Environmental Summit (2008);
7. Ist, 2nd & 3rd National Stakeholders' Forums on the New Mechanism for Environmental Protection and Sustainable Development in Nigeria (2008/2009);
8. The National Climate Change Roundtable in Nigeria (2009);
9. Federal/State Regulatory Dialogue on the Implementation & Operationalization of Environmental Regulations/Review of New Regulations (2010); and
10. Comments on the Draft Gas Flaring Penalty Bill Provision by the NFRC.

For purposes of space limitations, this article will only present the processes and results of two major consultative efforts of government. However, it was confirmed that most of the stakeholders' forums ended as mere national jamborees and their recommendations were not utilized and as such, the expert opinion of the few patriotic indigenous experts consulted did not reflect in the final document of the gas re-injection policy in Nigeria (See Eseduwo, 2012:191-241 for details). The two major consultative efforts on environmental policy-making by the Nigerian government on focus here are: **(i)** The First National Environmental Summit (2008); and **(ii)** The Nigeria Flare Reduction Committee (NFRC) (2007).

First National Environmental Summit (2008)

The first National Environmental Summit was held at the Transcorp Hilton, Abuja from October 20-21, 2008, under the auspices of the Federal Ministry of Environment. The theme of the Summit was *Greening the Environment for Sustainable Economic Development*. The overall goal of the Summit was to mainstream environmental issues and concerns in the national priorities of Nigeria's development. Some of the specific objectives of the Summit include:

(a) To raise national awareness on the imperative of sustainable environment for national development among various stakeholders, including the public, private and civil society actors;
(b) To obtain critical environmental issues that should be mainstreamed into the 7-Point Agenda for development and the proposed Vision 2020 document; and
(c) To collate critical inputs for the formulation of a National Environment

Action Plan (NEAP).

In addition, the Summit was intended to provide for Nigeria, the following opportunities:

(i) to put the intricate linkages between environment and economic development in proper perspective; (ii) to prepare the country to effectively respond to global challenges and imperatives for Sustainable Development; and (iii) to set in motion a periodic process in which the country can take stock of its biophysical and chemical environment to achieve Sustainable Development.

The summit was attended by about 600 stakeholders from all over the country. These include the then Vice President, Dr. Goodluck Jonathan, GCON who represented the President, Commander-in-Chief of the Armed Forces of the Federal Republic of Nigeria, Alhaji Umaru Musa Yar'Adua, GCFR, as Special Guest of Honour. Also in attendance were Governors, Deputy Governors, Honourable Commissioners, Senior Special Advisers to the President, the Resident Representative of the UNDP, Members of the Diplomatic Corps. Others included Permanent Secretaries, Chief Executives of Parastatals, Directors, Experts, Representatives of Research Institutes, Non-Governmental Organizations (NGOs), and Members of the Academia. Participants were required to take part in both plenary and group sessions of the Summit towards providing critical inputs for the development of a National Environment Action Plan. One-page executive summaries of State position papers were expected for appreciation. And at the end of the Summit, a National Environment Pledge was expected to be signed by every State Governor. The erstwhile Honourable Minister of Environment Arc. Halima Tayo Alao hosted the Summit (See Letter Ref. No. FMEHUD/PAMI/486/VOL.2 of September 17, 2008; and Communiqué of the National Environment Summit, October 20-21, 2008). It is worthy of note that lead technical paper presenters/discussants were drawn extensively from the academia and top government officials to do justice to 19 sub-themes. See table 6 below for the sub-themes, lead presenters, and discussants.

Table 6: Sub-themes for the First National Environment Summit in Nigeria and Lead

Presenters/Discussants

S/No	ENVIRONMENTAL SUB-THEME	LEAD PRESENTER/DISCUSSANT
1.	NEEDS/MDGs/National 7-Point Agenda and the Environment.	(i) Hajia A. Ibrahim (Presidential Adviser on MDGs) (ii) Mr. C.E. Ozo, mni
2.	Population, Lifestyles and Environment	(i) Prof. N. Osuntogun (ED, FEDEN, Lagos) (ii) Mr. Sunday Joshua
3.	Natural Resources Management (Including Biodiversity and Wetlands) for Sustainable Development	(i) Prof. Emma. Obot (ED, NCF, Lagos) (ii) Mr. Emma. Bebien
4.	Environmental Harzards (Floods, Erosion, Drought and Desertification)	(i) Prof. Ologe (Abuja) (ii) Mr. O. Oladipupo
5.	Food, Agriculture and Water Resources	(i) Prof. E. Olofin (BUK, Kano) (ii) Mr. D. Okeke
6.	Industry, Trade, Tourism and Environment	(i) Chief. S. Runsewe (DG, NTDC) (ii) Mrs. C.A. Owolabi
7.	Pollution and Waste Management (Cleaner Production should be a way to curtail waste problems)	(i) Prof. A.O. Afolabi (Perm. Sec. Fed. Min. of Agric. Abuja)

8.	Energy, Technology and Environment	(i) Prof. Sambo (DG, Energy Commission, Abuja) (ii) Dr. Usman
9.	Gender and Natural Resources Management	(i) Miss. E. Eghobamien (Gender Adviser, CIDA-PSU) (ii) Dr. (Mrs.) Uju Okoye
10.	Combating the Impacts of Climate Change – Adaptation, etc	(i) Prof. D. Okali (ED, NEST, Ibadan) (ii) Dr. Gwari (Dept. Of Crop Science, UNIMAID) (iii) Dr. V. Fodeke & Dr. S. Adejuwon
11.	Oil and Gas and the Niger Delta Environment	(i) Mr. V. Imevbore (NDDC, P.H) (ii) Mrs. O. Lambe
12.	Coastal and Maritime Environment	(i) Mr. Larry Awosika (NIOMAR, Lagos) (ii) Mr. C. Nwunne
13.	Financing Ecological Problems	(i) DG, FIRS (ii) Mr. O. Keleko (Dep.Dir, Accts)
14.	Trans-boundary Environmental Issues	(i) Amb. K. Garba (Sec.Gen.

14.	Trans-boundary Environmental Issues	(i) Amb. K. Garba (Sec.Gen. Nig./Niger Joint Comm. (NNJC) (ii) Dr. Bukka Hassan
15.	Public Awareness and Environmental Education	(i) Dr. F.A. Edem (Dept. Of Env. Edu. UNICAL (ii) Prof. G. Obioma (ES, NERDC) (iii) Dr. (Mrs.) Uju Okoye
16.	Environmental Enforcement and Compliance	(i) Dr. I.G. Onyekwelu (ii) Mrs. F. Babade
17.	Environmental Statistics and National accounting	(i) Mr. Sunday Job (Nat. Bureau of Statistics) (ii) Mr. P.O. Bankole
18.	Environmental Health and Sanitation	(i) Prof. M.R.K. Shrighar (UCH, Ibadon) (ii) Dr. N.M. Akpan
19.	Environmental Governance – Local, National and regional integration (ECOWAS, NEPAD)	(i) Muyiwa Odele (UNDP) (ii) Ako Amadi (CIDA-PSU) (iii) Mrs. C.A. Owolabi

Source: Federal Ministry of Environment, Appendix II of Circular No.FMEHUD/PAMI/486/VOL.2/4 (2008).

Some of the observations made by the Summit were that:

Environment summits and similar meetings provide excellent opportunities for knowledge sharing and decision-making for joint national actions;

The Federal Ministry of Environment deserves commendation for establishing linkage centres for research and development in a number of Nigerian Universities;

Environmental education and awareness as well as partnership arrangements play crucial roles in environmental management and protection;

Partnership and collaboration at various levels are necessary for management of trans-boundary ecosystems;

There is a low level of domestication of some of the Environmental Conventions and Protocols to which Nigeria is a signatory;

There is overlap of functions among Government Ministries/Departments/Agencies responsible for environmental management and protection in Nigeria;

Many environmental laws and regulations in the country are due for review;

Inadequate institutional and human resources specifically to tackle environmental issues in the country; and

Popular participation which is vital in the management of projects for environmental management and protection is very low. (See Eseduwo, 2012:399-401) for Communiqué of the National Environment Summit 2008.

Based on the foregoing observations and others, the Summit amongst others, made the following recommendations to Government:

(i) The need to strengthen the existing Federal Ministry of Environment and the University Linkage Centres on environmental research and development;

(ii) The Federal Ministry of Environment should collaborate with the Federal Ministry of Science and Technology to resuscitate the Integrated Coastal Area Management Initiative;

(iii) The Revised National Policy on Environment which is more participatory in nature needs to be backed up by appropriate law(s) and that the Federal Ministry of Environment, the Federal Executive Council and the National Assembly should expedite action, accordingly;

(iv) There should be strong definition of functions, roles and responsibilities amongst ministries/departments/agencies involved in environmental protection and management;

(v) Judges and Lawyers should be adequately trained to handle environmental matters;

(vi) Special courts to handle environmental issues should be created;

(vii) The construction of dams should be pursued with the ultimate caution and strong consultation with all stakeholders, particularly the downstream states; and

(viii) The Federal Ministry of Environment should as a matter of urgency, review or develop a National Environmental Action Plan, the implementation of which should accelerate the conservation and sustainable use of the country's environmental resources (See Communiqué of the National Environment Summit 2008; as in Eseduwo, 2012: 399-401)

A number of issues appeared discernible from the Summit that further validate the central thesis of this article, that there is a relationship between consultation/utilization of committed indigenous scientific and technological advice and effective associated gas re-injection policy-making/implementation. Some of such issues include: One, the appreciation of the need for collaboration between the Federal Ministry of Environment and Universities/Research Institutes to find solutions for environmental management problems on one hand, and the need for collaboration between the Federal Ministry of Environment and the Federal Ministry of Science & Technology for better inputs in environmental policy-making and implementation on the other hand. Two, the Summit also appreciated the need for Judges and Lawyers to be adequately trained to handle environmental matters; and stressed the need for the creation of special courts to handle environmental issues. Three, composition of the participants drawn for the summit cut across Experts, Representatives of Research Institutes, Non-Governmental Organizations (NGOs), and Members of the Academia. It is observed also from Table 6 above that technical papers on environmental sub-themes were presented by many academics. No wonder the observations and recommendations put forward by the Summit were more specific, measurable and instructive. Although, the main theme of the Summit, *Greening the Environment for Sustainable Economic Development* was not specifically on associated gas flaring and re-injection policy-making and implementation in Nigeria, nevertheless, it has largely shed light on the significance of science and technology input in environmental policy-making/implementation and the apparent dearth of consultation of indigenous scientific and technological expertise in associated gas re-injection policy-making in Nigeria. Thus, the First National Environmental Summit also made little or no direct scientific and technological input in the formulation of Nigeria's associated gas re-injection policies. Nevertheless, its composition and approach reflected an improvement in the policy-makers' level of perception of what they want to do and their learning disposition. Yet, the political will was still low as the implementation of environmental policies is still at its lowest ebb in Nigeria.

The Nigeria Flare Reduction Committee (NFRC) (2007)

The Nigeria Flare Reduction Committee (NFRC) was created in November, 2007 by the Federal Government of Nigeria (FGN) under the auspices of the Federal Ministry of Petroleum Resources. Its creation was one of the initiatives of a workshop organized by the Global Gas Flare Reduction (GGFR) in Abuja in September 27, 2007, to highlight and educate participants on the economic

significance of reducing gas flaring, and it is considered a strong demonstration of FG's commitment towards achieving overall gas flare reduction (NFRC 2010:8). The general objective of the Committee was to assist the Nigerian government in developing a roadmap for achieving reduction in gas flaring in a realistic time frame. The NFRC was created in partnership with the major Nigerian oil & gas operators and with support and assistance from the World Bank/Global Gas Flaring Reduction Partnership (WB/GGFR). The Committee was saddled with the responsibility to not only identify technically and financially viable options that would be satisfactory to all stakeholders for the reduction of routine gas flaring, but also advise the Federal Government of Nigeria on the mechanism for the implementation of the selected options. The NFRC meets every month.

The composition of the NFRC is as follows:

A. Federal Government

(1) O. Ikejiani (Rep. Federal Ministry of Petroleum Resources)
(2) M. Alaku (Rep. Directorate of Petroleum Resources)
(3) B.A. Indabawa (Rep. Directorate of Petroleum Resources)
(4) A. Ebelendu (Rep. Federal Ministry of Environment)

B. Operators (Petrobusinesses)

(5) N. Okafor (Rep. SPDC)
(6) A. Jawando (Rep. ADDAX)
(7) H. Mohammed (Rep. CHEVRON)
(8) A. Oladunni (Rep. EXXON/MOBIL)
(9) K. Opuene (Rep. AGIP)
(10) Rep. TOTAL
(11) Rep. PAN OCEAN
(12) Rep. Oil Producer's Trade Sector (OPTS) Secretariat
(13) O. Okor (Rep. Nigerian Petroleum Investment Management (NAPIMS))
(14) G. Okesanya (Rep. NAPIMS)
(15) E. Kalu (Rep. NAPIMS)

C. Facilitators

(16) B. Svensson (Rep. World Bank)
(17) M. Howells (Rep. World Bank)
(18) O. Ayoola (Rep. World Bank)
(19) M. Ibanez (Rep. GGFR)

The specific objectives of the NFRC are:

To provide a forum where representatives of the Federal government of Nigeria, Directorate of Petroleum Resources and operators can discuss the operators' flare reduction programmes in a cooperative spirit, so that: (i) plans are well understood by all parties; (ii) issues can be identified and discussed; and (iii) opportunities for cooperation can be identified;

To collect and analyze information on flare reduction plans in order to

provide the Minister of Petroleum Resources with relevant data on the consequence of specific flare reduction options; and

To make recommendations to the Minister on the effective management of gas flare reduction plans of the Operators (NFRC 2011:2).

The NFRC after studying the data from the major Petrobunisesses provided the following advice to the Minister of Petroleum Resources on:

1. Forecast of future flaring levels: 2008-2013
2. Status of operators' associated gas utilization plans
3. Consequences, financial and operational, of stopping flaring from various dates (end-2008, end-2010, mid-2011, end-2011)
4. Options for acceleration of flaring reduction
5. proposal and Terms of Reference (TOR) for a study into the environmental & Health consequences of flaring (suspended by the State Minister, Petroleum Resources in anticipation that the expected duration of the study would mean that the results would only be available after the zero routine flaring deadline date). (See Draft Report on the activities of the NFRC 2010:5-6).
6. A process to define a Flare Reduction Plan for Nigeria, and
7. A communication plan that includes: (i) a communication strategy; (ii) preparation of an opinion piece; and (iii) development of a website (NFRC 2011:3).

The NFRC has also provided the following input to the National Assembly on the Flare Reduction Bill:

a. Definition Section 1: The current provision as drafted does not make due exception for pilot flare which is required for safe oil & gas operations. The NFRC therefore advised that *there is the need to include in the appropriate relevant definitions section in the bill, a clause to define an allowable minimal pilot flare, in line with internationally accepted good operational practices*;
b. Section 9 (1) (a) (i): The penalty in the draft bill is currently tied to the prevailing market price for gas in the international market. In view of the vagaries of the international market, the NFRC advised that *the penalty is better tied to specific amount (e.g. $3.50/mcf) rather than a market price which can vary rapidly and significantly;* and
c. Section 9 (1) (b): Observation: - This additional penalty clause in the draft bill (i.e. 50% of flare penalty for communities) may indirectly be encouraging unscrupulous individuals within the communities into willfully sabotaging facilities with the intent to increasing flaring event with a resultant increase in flared volumes in order to benefit from the penalty prescribed in the current draft. Therefore, the NFRC advised that *there is a need for the bill to qualify the penalty such that it will not be applied to gas flaring attributable to acts of sabotage*. In this regard, the NFRC further advised that *a provision and/or imprisonment of any person(s) guilty of direct and/or indirect acts of sabotage that results in increased flaring at oil and gas facilities may need be added into the draft bill to discourage acts of deliberate sabotage* (NFRC 2009:1-6).

In sum, the NFRC (2011:5) in its presentation to the Honourable Minister of

Petroleum Resources proffered the following key messages to Nigerian Government: That;

1. Operators continue to make significant progress in flare reduction over the years;
2. Under operators' current plans for associated gas utilization, routine flaring will reduce progressively over the coming years but will achieve zero routine flaring only after 2013;
3. In the short term, the Federal Government of Nigeria (FGN) can accelerate flare reduction through implementation of a Nigeria Flare reduction Plan (NFRP), but at the cost of reduction in oil production;
4. The FGN can use oil production reductions that may be needed to meet OPEC production ceilings to reduce flaring, but will need to target high Gas-Oil Ratio (GOR) production in flaring fields for the flare reductions to be material;
5. In the longer term, it may be possible to accelerate operators' flare reduction plans, but this will require the cooperation of all stakeholders;
6. Continued improved security is essential for the implementation of an effective flare reduction plan; and
7. A coordinated communications strategy with major stakeholders is needed to reduce uncertainty about Nigeria's flare reduction plans.

It is observed from the above exposition that the composition of the NFRC reflected 58% Petrobusiness representation, 21% Government (regulators) representation, and 21% Facilitators (WB/GGFR) representation. It implies that Government (regulators) and facilitators representation put together is 42% as against Petrobusiness (operators) representation of 58%. The consequences of this lopsided representation of operators in a committee to advise Government (regulator) on a regulatory issue are two-fold. One, there is the likelihood of misleading advice as the operators who are dominating in science and technology are also dominating in representation in the committee. Two, the operators are to bear a larger burden of the end result of the advice which is a regulatory policy, and as such, would do everything to reduce the burden. This, according to the perception, commitment, learning disposition and political will (PCLW) framework for the assessment of policy-making and policy-implementation processes, suggests weak political will on the part of the regulator (Government). As Ogbanlyam (2011) rightly noted:

> A country that is able to resist the dictates of an external actor in its choice of a policy is likely to be cohesive and being cohesive in its choice, it is likely to stand by the implementation of its choice (www.oppcur.com, retrieved, May 19, 2011).

Thus, PCLW assumed that whenever a choice is dictated externally there is already an indication of a weak will or lack of exercise of political will. It was discovered also that the Federal Ministry of Science & Technology, the academia

and science-based non-governmental organizations/associations such as the Nigerian Society of Engineers, and others were not represented in the NFRC. It is observed also from the technical advice provided by the NFRC that the interest of Petrobusinesses was more protected under the façade of threat of reduction in oil production and attendant oil revenue. It is quite worrisome, although not surprising by the majority representation of Petrobusinesses in the NFRC, as the Committee observed that "Operators continue to make significant progress in flare reduction over the years" when practically gas flare sites are geometrically increasing in the Niger Delta with attendant increase in gas flaring over the years. Table 7 below depicts the increasing rate of gas flaring in Nigeria between 1950 and 2009.

Table 7: Increase/Reduction of Gas Flaring during Oil Production in Most Pollutant Countries

Country	Earlier % of Gas Flaring	Present % of Gas Flaring	Remarks
Nigeria	1963 = 46%	2009 = 75%	Increase
Saudi Arabia	1967 = 418%	2009 = 20 %	Reduction
Venezuela	1950 = 351%	2009 = 0.7%	Reduction
Norway	1970 = 12%	2009 = 0.2%	Reduction
USA	1950 = 4.8%	2009 = 0.6%	Reduction
Britain	1990 = 14%	2009 = 0.7%	Reduction
Algeria	1970 = 97%	2009 = 19%	Reduction
Libya	1976 = 656%	2009 = 21%	Reduction
Mexico	1950 = 11%	2009 = 5%	Reduction
Iraq	1965 = 120%	2009 = 30%	Reduction
Iran	1955 = 405%	2009 = 35%	Reduction
Oman	1970 = 680%	2009 = 0.3%	Reduction

Sources: World Bank (1995:59); Gervet (2007:9); NGDC Flaring Report (2009); NOAA (2010); and Eseduwo Field Study (2010).

The data in Table 7 is a clear testimony of the fact that something is actually wrong in Nigeria's associated gas re-injection policies. The volume of gas flared in all other countries is reducing while it is increasing in Nigeria, phenomenally.

The inputs of the NFRC to the National Assembly on the Gas Flare Reduction Bill

are also bothersome. Specifically on Sections 9 (1) (a) (i); and Section 9 (1) (b), where the penalty in the draft bill is aptly tied to the prevailing market price for gas in the international market, the NFRC advised that *the penalty is better tied to specific amount (e.g. $3.50/mcf) rather than a market price which can vary rapidly and significantly;* and Section 9 (1) (b), where the bill aptly provided an additional penalty clause of 50% of flare penalty for communities, the NFRC advised the inclusion of a *sabotage clause*. It is the same sabotage clause in the oil spill compensation act that the Petrobusinesses have been using as escape route to shelve responsibility of oil spill damages and attendant payment of claims of affected oil-bearing communities. This has instigated a lot of crises between the Niger Delta Youth and Petrobusinesses. One of such crises was the Aleibiri Demonstrations of 1997 (See Ibeanu 2000:5-6). These inputs seem to reflect the interest of Petrobusinesses (the operators in the oil and gas industry) other than facilitating a workable associated gas re-injection policy to regulate oil production activities in Nigeria. This is evident in the solo opinion of Kingsley Opuene of the AGIP to the National Assembly on the same bill for an Act to prohibit gas flaring in Nigeria. Opuene is also a member of the NFRC, representing the AGIP. In Opuene (2009:1-3) he also argued on the same sections and in the same manner as the NFRC does. According to him:

> The penalty as prescribed above is ambiguous. It would have been tidier to have a fixed value as the penalty. For example, subjecting of the penalty for gas flaring to market forces (cost of gas at the international market) is not a proper way of defining penalty for breach of a law. It is conceded that flaring of gas is an externality situation which ought to be addressed using price mechanism. But since the bill is defining an offence in specific terms, it is my humble opinion that the assessment of the penalty too should not be left subjective. An amount should be provided as is currently extant (currently $3.50 is the penalty for every 1000 scf of gas flared).

On the said section, Opuene again argued thus:

> I appreciate the concern of the sponsors of the Bill as regards the need for the development of oil bearing communities. Nevertheless, it is my humble opinion that the above paragraph should be expunged from the Bill. The reason is that it amounts to double jeopardy. To subject an operator who has already paid the prescribed penalty to pay another fifty percent of the penalty for community development activities amounts to punishing the violator twice for the same offence. Even the 1999 Constitution admonishes against such in section 36 (9).

Let us see what Section 36 (9) of the 1999 Constitution says:

> No person who shows that he has been tried by any court of

> competent jurisdiction or tribunal for a criminal offence and either convicted or acquitted shall again be tried for that offence or for a criminal offence having the same ingredients as that offence save upon the order of a superior court (1999 Constitution: Fundamental Human Rights Enforcement Procedure, p.47).

The above provision of the 1999 Constitution hardly substantiates Opuene's argument on
Section 9(1) (b) of the draft Bill which proposed thus:

> The operator of the field or group of fields from which gas is flared or vented in contravention of Section 1(2) of this Act, shall also be liable to pay an amount equivalent to fifty percent of the penalty prescribed in paragraph (a) of this subsection, as compensation through the office of the Minister to the Local Government Council for the community development activities in the adjoining communities where the gas flare or vent activity is perpetrated (Gas Flaring (Prohibition and Punishment) Bill, 2009).

What does Section 1(2) of the Bill for an Act to prohibit gas flaring in Nigeria in reference say? Section 1 (2) of the bill proposed that "no company engaged in the prohibition of oil and gas shall after 31st December, 2010 flare natural gas produced whether in association with oil or not". It is clear from the above that the prescribed payment of an amount equivalent to 50% of the penalty prescribed in paragraph (a) of the subsection, as compensation for community development in gas flare affected communities does not in any way amount to retrial of an offender who has been tried by any court of competent jurisdiction or tribunal for a criminal offence. The aptness of Section 36 (9) of the 1999 Constitution of the Federal Republic of Nigeria to Sections 9(1) (b) and 1(2) of the Bill for an Act to prohibit gas flaring in Nigeria as claimed by Opuene is highly doubtful. Another area of collaboration between Opuene's opinion and that of the NFRC on their inputs to the National Assembly on the Gas Flaring (Prohibition and Punishment) Bill, 2009, is the $3.50 being prescribed by both parties. It is therefore logical to conclude that the inputs of the NFRC to the National Assembly on the Gas Flaring (Prohibition and Punishment) Bill, 2009 were largely influenced by the Petrobusinesses.
Having observed government's consultative efforts on official documents, we now turn to the responses obtained through face-to-face interviews from relevant officials on whether their expertise were consulted and/or utilized in gas re-injection policy-making in Nigeria. This is analyzed through Tables 8-13.

Table 8: Responses from the Federal Ministry of Petroleum Resources

S/NO	QUESTION	PATTERNS OF CONSULTATION/EXPERIENCE/RESPONSE						TOTAL RESPONDENTS
		Special Research (Basic or Applied)	Technical Committee	Stakeholder Meeting/ workshop Discussions	Not At All	Low	High	
1.	To what extent did you participate in the making of Associated Gas Re-injection policies in Nigeria?	0 (0.0%)	0 (0.0%)	5 (55.5%)	4 (44.4%)	0 (0.0%)	0 (0.0%)	9
2.	To what extent has your inputs been utilized and/or reflected in the Associated Gas Re-injection Policy Document?	0 (0.0%)	0 (0.0%)	0 (0.0%)	6 (66.6%)	2 (22.2%)	1 (11.1%)	9

SOURCE: ESEDUWO FIELD WORK, 2010.

Table 8 shows the data collected from nine selected scientists/technologists such as petrochemical engineers, petroleum engineers, geologists, etc in the Federal Ministry of Petroleum Resources. It is observed that 55.5% of the respondents drawn from the Federal Ministry of Petroleum Resources confirmed that they participated in the process of formulation of the Associated Gas Re-injection Policy only through stakeholder meeting/workshop while 44.4% confessed they have not participated at all. 66.6% of the respondents confirmed that the inputs of experts through stakeholder meeting/workshop were not utilized at all while 22.2% said utilization is low by associated gas re-injection policy-makers. On the areas of special research and technical committee, it implies that officials of the Federal Ministry of Petroleum Resources did not participate. This underscores skewed technical consultation by gas re-injection policy-makers.

Table 9: Responses from the Federal Ministry of Science and Technology

S/NO	QUESTION	PATTERNS OF CONSULTATION/EXPERIENCE/RESPONSE						TOTAL RESPONDENTS
		Special Research (Basic or Applied)	Technical Committee	Stakeholder Meeting/ workshop Discussions	Not At All	Low	High	
1.	To what extent did you participate in the making of Associated Gas Re-injection policies in Nigeria?	0 (00.0%)	0 (0.0%)	0 (0.0%)	9 (99.9%)	0 (0.0%)	0 (0.0%)	9
2.	To what extent has your inputs been utilized and/or reflected in the Associated Gas Re-injection Policy Document?	0 (0.0%)	0 (0.0%)	0 (0.0%)	9 (99.9%)	0 (0.0%)	0 (00.0%)	9

SOURCE: ESEDUWO FIELD WORK, 2010.

Table 9 shows the data collected from the nine officials of the Federal Ministry of Science & Technology. It is observed from the data that 99.9% of the respondents confirmed their non-participation in the formulation and implementation of associated gas re-injection policies either through special research (Basic/Applied), technical committee and/or stakeholder meeting/workshop. This is clear evidence that the so-called stakeholder meetings/workshops were unrepresentative and parochial as they did not cut across all relevant agencies/departments. It is not a true reflection of gas re-injection policy-making and implementation stakeholder forum when the Ministry of Science & Technology was not represented. This is because gas re-injection policy-making belongs to the category of technology-intensive policy-making. Section two (vi) of the 1986 (Revised Edition) National Policy of Science and Technology of Nigeria empowers the Federal Ministry of Science & Technology to deliberately patronize the Universities and Research Institutes for challenging research projects with specific objectives. The challenge of gas re-injection technology supposed to be one of such challenging researches in Nigeria, yet the Federal Ministry of Science & Technology was not involved neither in the special research nor the stakeholder meeting consultative approach as shown in table 9 above. It is clear in the data that the Federal Ministry of Science and Technology did not participate either in special research or technical committee stage of gas re-injection policy-making in Nigeria. This underlines also the low level of consultation and utilization of indigenous scientific and technological expertise in gas re-injection policy-making in Nigeria's oil & gas industry.

Table 10: Responses from the Federal Ministry of Environment

Table 10: Responses from the Federal Ministry of Environment

S/NO	QUESTION	PATTERNS OF CONSULTATION/EXPERIENCE/RESPONSE						TOTAL RESPONDENTS
		Special Research (Basic or Applied)	Technical Committee	Stakeholder Meeting/ workshop Discussions	Not At All	Low	High	
1.	To what extent did you participate in the making of Associated Gas Re-injection policies in Nigeria?	0 (00.0%)	3 (33.3%)	6 (66.6%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	9
2.	To what extent has your inputs been utilized and/or reflected in the Associated Gas Re-injection Policy Document?	0 (0.0%)	0 (0.0%)	0 (0.0%)	1 (11.1%)	5 (55.5%)	3 (33.3%)	9

SOURCE: ESEDUWO FIELD WORK, 2010.

Table 10 illustrates the data collected from nine professionals drawn from the Environmental Conservation, Petroleum & Pollution, Ecology, Forestry, and Waste Management & Environmental Health Departments of the Federal Ministry of Environment, Housing & Urban Development. The nine officers cut across the gamut of science and technology cadres of the Ministry of Environment such as Physicists, Chemical Engineers, Petroleum Engineers, Petrochemical Engineers, Geologists, Biologists, Foresters, Ecologists, Environmental Sanitation Officers, Health Superintendents, Laboratory Technicians, Public Health Superintendents, Technologists, etc. It is observed in the data that only 33.3% of the nine officers of the Federal Ministry of Environment experienced participation at the stage of technical committee leading to the making of the latest associated gas re-injection policy (2004), while 66.6% experienced participation at stakeholder

meeting/workshop stage. None participated at the stage of special research. Information-gathering is the first stage of the *participatory environmental policy-formulation model* (See Kende-Robb and Wicklin 111 2007: 106). The technical committee stage is therefore responsible for the task of gathering relevant information. It is the preparatory stage of drafts of environmental regulations. At this stage, procedures, processes and methodologies applied in some developed and developing countries are studied (Benebo, 2008:5). All scientific and technological nuances are expected to be fine-tuned at this stage. Yet, it is demonstrated in the data that only a minute number of indigenous environmental experts in the Federal Ministry of Environment were involved and the utilization of the inputs of the few experts was lax.

It was revealed through personal interviews with Directors in the State Ministries of Environment that at the stakeholder meeting/workshop stage, technical details are overlooked as a result of limited time and rowdiness. Thus, stakeholder meetings/workshops on gas flare-out deadlines in the Ministry of Environment were aptly described as jamborees. Nonetheless, the stakeholder meetings/workshops were ostensibly meant to sift the works of technical committees by way of looking at gray areas (if any). Ordinarily, it is supposed to be the stage to assess the technical adequacies and inadequacies concerning the implementability of the proposed policy and/or regulations. In practice, the stakeholder meeting/workshop stage has been reduced to mere social circles for window-dressing orchestrated by conspicuous workshop tags, bags, rowdy tea breaks, lunches, and dinner tickets. The high degree of participation of indigenous experts at the stakeholder meeting/workshop stage instead of the special research and technical committee stages therefore depicts lack of proper appreciation of indigenous scientific and technological expertise in gas re-injection policy-making and implementation in Nigeria. It is worrisome also that the priority of technical committees is to study procedures, processes and methodologies applied in other countries as reported by the Director-General/CEO of the NESREA in her presentation titled *Evolving Environmental Standards and Regulations in Nigeria: Prospects and Challenges,* at NESREA 2nd National Stakeholders' Forum (2008:5).

It is observed in table10 that indigenous experts' participation at the stage of technical committee is low. This was also evident in the lopsided composition of the National Flare Reduction Committee (NFRC) earlier observed. Axiomatically, this is prone to mere copying of procedures, processes and methodologies applied in other countries without due consideration of the peculiar circumstances (scientific, technological, economic, political and cultural) of the Nigerian oil & gas industry and the Niger Delta environment. The propensity for enforceability of gas re-injection policies and/or regulations arising from such wishy-washy foundations is geometrically low. This largely points to a nexus between lack of appreciation of indigenous expert advice in gas re-injection policy-making and the failure of gas re-injection policies in Nigeria. It also explains the continuous failure of associated

gas flare-out deadlines in Nigeria. It is a fundamental truth that no two countries operate on the same environments and in the same circumstances. It is manifest in Nigeria's public policy-making domain that replication of the structures, institutions, policies, legislations, constitutions, procedures, processes and methodologies of the developed World is rampant and gas re-injection policy-making can not be an exception. This also underscores Nigeria's reliance on technology transfer from other countries for the survival of all science and technology-driven sectors such as energy, manufacturing, downstream oil & gas, aviation, automobile, shipping, agriculture, electronics, arms & ammunition, communication, data capture machines, transparent ballot boxes, and so on. Thus, the successive Nigerian ruling elite have brutally murdered the major fruits of independence i.e. widening of opportunities for self expression and advancement on the altar of neocolonialism.

Table 11: Responses from the State Ministry of Environment in Bayelsa, Delta and Rivers States

S/NO	QUESTION	PATTERNS OF CONSULTATION/EXPERIENCE/RESPONSE						TOTAL RESPONDENTS
		Special Research (Basic or Applied)	Technical Committee	Stakeholder Meeting/ workshop Discussions	Not At All	Low	High	
1.	To what extent did you participate in the making of Associated Gas Re-injection policies in Nigeria?	0 (00.0%)	0 (0.0%)	7 (77.7%)	0 (0.0%)	2 (22.2%)	0 (0.0%)	9
2.	To what extent has your inputs been utilized and/or reflected in the Associated Gas Re-injection Policy Document?	0 (0.0%)	0 (0.0%)	0 (0.0%)	1 (11.1%)	8 (88.8%)	0 (0.0%)	9

SOURCE: ESEDUWO FIELD WORK, 2010.

Table 11 displays the data collected from nine professionals (three each) from the State Ministry of Environment in Bayelsa, Delta and Rivers States of Nigeria. They were also drawn from the core professional departments of the Ministry of Environment viz: Environmental Conservation, Petroleum & Pollution, Ecology, Forestry, and Waste Management & Environmental Health. The nine respondents also constitute the main scientific and technological cadres in the Ministry of Environment such as Physicists, Chemical Engineers, Petroleum Engineers, Petrochemical Engineers, Geologists, Biologists, Foresters, Ecologists, Environmental Sanitation Officers, Health Superintendents, Laboratory Technicians, Public Health Superintendents, Technologists, etc. It is observed that 77.7% of the respondents confirmed the State Ministry of Environment's participation at the stakeholder meeting/workshop stage while 22.2% described the overall participation of state ministry of environment in associated gas policy-making as being low. On the issue of utilization of their inputs 88.8% revealed low utilization and 11.1% confirmed that the inputs of the States Ministry of Environment were not utilized at all. It is also evident that States Ministry of Environment did not participate at the special research and technical committee stages. This is also a pointer to low appreciation of indigenous expert advice in gas re-injection policy-making, as professionals in the State Ministry of Environment in Bayelsa, Delta and Rivers States who are closer to the problem of gas flaring in Nigeria were not involved in the two very critical stages of consultation. The day-to-day observations on gas flaring and its adverse consequences on the Niger Delta biosphere are reported to the State Ministry of Environment in the Niger Delta States. It implies that professionals in the State Ministry of Environment are better informed and versatile in issues of gas flaring. Of a fact, they are in a better position to offer technical advice on how to curb the menace of gas flaring in Nigeria. Subjecting such relevant section of indigenous experts' participation in gas re-injection policy-making to mere stakeholder meeting/workshop also portrays low appreciation of indigenous expertise.

Table 12: Responses from the Nigerian Society of Engineers, Bayelsa, Delta and Rivers State Chapters

S/NO	QUESTION	PATTERNS OF CONSULTATION/EXPERIENCE/RESPONSE						TOTAL RESPONDENTS
		Special Research (Basic or Applied)	Technical Committee	Stakeholder Meeting/ workshop Discussions	Not At All	Low	High	
1.	To what extent did you participate in the making of Associated Gas Re-injection policies in Nigeria?	0 (00.0%)	0 (0.0%)	0 (0.0%)	9 (100%)	0 (0.0%)	0 (0.0%)	9
2.	To what extent has your inputs been utilized and/or reflected in the Associated Gas Re-injection Policy Document?	0 (0.0%)	0 (0.0%)	0 (0.0%)	9 (100%)	0 (0.0%)	0 (0.0%)	9

SOURCE: ESEDUWO FIELD WORK, 2010.

Table 12 shows the data collected from nine members of the Nigerian Society of Engineers (three each) from Bayelsa, Delta and Rivers State Chapters. It is observed that the Nigerian Society of Engineers was not involved at all the stages of consultation, viz: special research, technical committee, and stakeholder meeting/workshop on gas re-injection policy-making. We were informed during face-to-face interview with members that the tradition of the Nigerian Society is that if the national working committee is consulted on an issue bothering the states, such issues are referred to the appropriate state(s) to properly investigate and

offer technical advice to the national. It was revealed that no such references have been made by the national and no direct consultation of the state chapters by gas policy-makers. One of such *interviews was held with one of the officials of the Nigerian Society of Engineers at 3.00 pm on Monday, January 31, 2011 in the State Secretariat, Yenagoa.*

It was also revealed that the membership of the Nigerian Society of Engineers cut across all the engineering disciplines such as mechanical, chemical, petrochemical, civil, electrical, electronics, corrosion, structural, construction, physicists, petroleum, aeronautic, agricultural, etc. The non-inclusion of the Nigerian Society of Engineers in the stakeholder meeting/workshop on gas re-injection policy-making is therefore an aberration to the standard practice of consultation and stakeholder analysis in technology-intensive policy-making. The Nigerian Society of Engineers has a lot to offer in the erection of associated gas re-injection and utilization facilities and as such, must be involved at all stages of consultation on gas re-injection policy-making/implementation if gas flare-out deadlines should succeed in Nigeria. The absence of it therefore depicts low appreciation of indigenous expert advice in gas re-injection policy-making in Nigeria.

Table 13: Responses from three Science/Technology Departments from the NDU, DELSU and UST

S/NO	QUESTION	PATTERNS OF CONSULTATION/EXPERIENCE/RESPONSE						TOTAL RESPONDENTS
		Special Research (Basic or Applied)	Technical Committee	Stakeholder Meeting/workshop Discussions	Not At All	Low	High	
1.	To what extent did you participate in the making of Associated Gas Re-injection policies in Nigeria?	0 (00.0%)	0 (0.0%)	2 (22.2%)	7 (77.7%)	0 (0.0%)	0 (0.0%)	9
2.	To what extent has your inputs been utilized and/or reflected in the Associated Gas Re-injection Policy Document?	0 (0.0%)	0 (0.0%)	0 (0.0%)	8 (88.8%)	1 (11.1%)	0 (0.0%)	9

SOURCE: ESEDUWO FIELD WORK, 2010.

Table 13 shows the information gathered from nine academics drawn from three science/technology departments (Chemistry, Physics, and Geology) (three respondents each) from the Niger Delta University (NDU), Wilberforce Island, Amassoma – Bayelsa State; the Delta State University (DELSU), Abraka; and the Rivers State University of Science & Technology (UST), Nkpolu - Port Harcourt. It is observed that academics in science-based departments in Universities located in the heart of the Niger Delta Region where gas flaring is rampant were involved minutely (22.2%) only at the stage of stakeholder meeting/workshop. 88.8% of the respondents confessed that they were not involved at any stage of consultation on gas re-injection policy-making, not even at their conventional stage of 'special

research' (Basic and/or Applied). In the same vein, their little input through paper presentations at a few stakeholder workshops were not utilized as 88.8% confirmed no utilization at all while only 11.1% confirmed low utilization of such inputs through stakeholder workshop papers. This is another major deviation from the standard practice of information gathering and technical analysis in technology-intensive policy-making. Paradoxically, the existing knowledge on gas re-injection and utilization technology all over the World revolves around the academics through university-based research and development (R&D). Yet, they play no significant role in the associated gas re-injection policy-formulation process in Nigeria. It was discovered through face-to-face interviews with academics that their role ended in presentation of papers on topics given by organizers in National Stakeholders Forums. This is also evident in the official documents earlier observed on the nature of consultation. It is also evident in the data collected from the nine academics that appreciation of indigenous expert advice is low in Nigeria's gas re-injection policy-making/implementation domain. This is an obvious aberration of the universally accepted role of experts in public policy-making and implementation (See Sapru, 2004; and Eseduwo, 2012; for details). The Nigerian Government's efforts to consult/utilize indigenous technical advice on associated gas re-injection policy-making and implementation is therefore grossly inadequate.

The length and breath of Government's consultative efforts fell into the entrepreneurial hands of Petrobusinesses who monopolize both the productive capacity and dominate the core technical advice structure in Nigeria's oil and gas industry. This was confirmed by a Director in the Oil and Gas Division of the Federal Ministry of Environment in a face-to-face interview (*Interview with a Director in the Oil & Gas Division of the Federal Ministry of Environment, the Environment House, Abuja, from 3.10pm – 4.20pm, on Wednesday May 4, 2011*). According to the Director:

> All the technical policy inputs made by relevant Government Ministries/Departments/Agencies and sincere International Bodies/Non-Governmental Organizations to bring about effective environmental regulatory policies are further upturned by Petrobusinesses through their domineering influence on the Nigerian oil-driven economy.

The comments of Opuene of the AGIP earlier observed also attested to this fact.
The foregoing evidences are not only indicators of poor political will but also a testimony of the effects of the neocolonial character of the Nigerian state. The neocolonial economy is an irreconcilable instrument for capital accumulation and class domination, as well as, rentier in nature as located in our theoretical framework – the *Marxist Theory of the Neocolonial State*. There are clear indications that there were successful interference with choices and attendant reversal of sound decisions to accommodate major oppositions from other

external actors (Petrobusinesses) in the gas re-injection policy-making and implementation processes. This also points to the fact that Nigeria's gas re-injection policy-makers are largely misled by petrobusiness-sponsored technical opinions, hence the failure of gas re-injection policies to effectively regulate petrobusinesses against gas flaring.

The Ineffectuality of Gas Re-injection Policies in Nigeria

The futility of Nigeria's gas re-injection policies points to the peculiar primitive state capitalism that exists in postcolonial Nigeria. Other real capitalist states like Britain, Norway, Venezuela, Saudi Arabia, Algeria, and so on, have put in place appropriate environmental pollution control policies to reduce the rate of gas flaring in their countries. This is clearly shown in Table 7 above. Today, countries like China and India are dancing with the giants in terms of development of their indigenous productive forces through inward-looking development administrative approach. As Winters and Yusuf (2007: viii) rightly noted that; "the Chinese and Indian authorities face important challenges in keeping their investment climates favorable, their inequalities at levels that do not undermine growth, and their air and water quality at acceptable levels. And that discussion of how these issues affect the giants has relevance as well to policy makers elsewhere".

Who are the 'giants'? They are the industrialized nations. The 'giants' are the home-countries of the petrobusinesses operating in Nigeria. Thus, China's and India's careful interaction with the 'giants' and home-grown development strategy through stringent policy-making with sufficient local content is quite instructive to Nigeria that is ever remaining a neocolonial state at the expense of its socioeconomic development. This article, therefore, sees Nigeria's capitalism as primitive due to the following reasons: One, the Nigerian state and its petit-bourgeoisie have not made the required sacrifice in investing on the development/appreciation of indigenous labour power and capital formation. Two, the essence of development administration is to strengthen the machinery for public policy making and implementation and this is lax in Nigeria since her attainment of flag independence in 1960. Three, the Nigerian state has not accepted its challenges of technology and capital formation and faced them squarely like in China and India. Four, the ruling class inherited the negative aspect of their colonial counterparts (selective development i.e. development of self and choice areas), while they disinherited the positive aspect of hard-work, development of technological know-how and aggressive capital formation for manufacturing and investment promotion. Hence, the Nigerian neocolonial state is engulfed in problems of technology transfers, excruciating foreign debts, balance payments, and so on.

A discussion of development administration and gas re-injection policy-making in Nigeria, therefore, is incomplete without pinpointing the undoing of successive Nigeria's ruling class who are only interested in using the state and its apparatuses for unbridle primitive accumulation of public funds instead of developing and

appreciating indigenous technological capacity to compete favorably with the 'giants'. Our sense of detachment from colonial mentality is growing so slowly that those values of collective self-worth, self-identity and reasonable independence as a sovereign nation-state are dwindling day-in-day-out. It is worrisome, that after more than fifty years of nationhood, we are still relying on those who are degrading our environment through petroleum prospecting to provide technical advice on the policies we want to use in regulating their activities. This explains the height of not only the futility of Nigeria's gas re-injection policies, but also Nigeria's efforts on development administration, since political independence.

We cannot talk about development when the yearly rate of gas flaring in Nigeria's Niger Delta Region is estimated at 2.5 billion cubic feet (bcf) with an annual market value of $2.5 billion (James, 2007:2; World Bank, 1995; Environmental Watch, 2001; Eseduwo, 2012:244). A total of 5.0 trillion cubic feet of associated gas was reported to have been flared in Nigeria between 1958 and 1999 which represents 88% of the 5.7 trillion cubic feet that was produced within the period (Environmental Watch, 2001:5). This implies that over 6.0 trillion cubic feet of gas has been flared in Nigeria between 1958 and 2010. At present, over 100 gas flare sites continue to emit noxious gases in Nigeria's Niger Delta. In sum, the implication of flaring gas to Nigeria is two-fold, viz: One is the lost of $2.5 billion (N3.8 trillion) in government revenue, annually for fifty years i.e. more than $100 billion (N180 trillion) loss of gas revenue for the period between 1960 and 2010; and Two, is the gangrenous environmental degradation of Nigeria's vulnerable economic zone – the Niger Delta and attendant numerous adverse consequences on the socioeconomic conditions of the oil-bearing communities in particular and the country at large. The specific adverse effects of gas flaring on the Niger Delta biosphere include: human health problems, vegetation depletion problems viz: plant diseases and species' extinction, deterioration of infrastructure/materials, and the multiplier effects on socioeconomic conditions of oil-bearing communities (See Eseduwo, 2012:247-271 for details). The general challenges of development administration in Nigeria, therefore, are largely subsumed in the problems of gas re-injection policy-making and implementation from 1969 to date.

Conclusion and Recommendations

This article takes a look at the challenges of Development Administration (DA) in postcolonial Nigeria focusing on the problems of gas re-injection policy-making and implementation as symptomatic of the process of DA in the country since 1960. It is argued that the failure of gas re-injection policies is part of the crisis of Development Administration and attendant predicament of the Nigerian neocolonial state. The Nigerian state, its patterns of techno policy-making and implementation, mode of production and surplus extraction under the neocolonial context, is more interested in the accumulation of personal wealth through the collection of rents and royalties from petrobusinesses other than the promotion of public goods through the development and appreciation of indigenous labour

capacity and local capital.

Development Administration cannot triumph in Nigeria, until the disarticulation of the indigenous productive forces (labour and capital) is drastically minimized, and as such, gas re-injection policies will continue to fail due to policy-makers' heavy reliance on Petrobusinesses for technology and capital towards the erection of gas reinjection/utilization facilities in onshore/offshore oil locations. It is a vicious circle i.e. the more the Nigerian state underutilizes its indigenous technological expertise in gas re-injection policy-making, the more disarticulation of its labour forces and attendant continuous gas flaring. And the more gas flaring the more economic waste to Nigeria and attendant disarticulation of the local economy (low capital formation), and continuous underdevelopment of all other sectors. Hence, the failure of gas re-injection policies to a large extent is the failure of Development Administration (DA) in the Nigerian postcolonial nation-state.

Thus, the article recommends as follows:

- Gas re-injection policy-makers and implementers should employ Development Administration approach to strengthen gas re-injection policy-making and implementation in Nigeria.

- Gas re-injection policy-makers and policy-implementers in Nigeria must systematically improve on their present level of perception, commitment, learning disposition, and political will (PCLW) in technology-intensive policy-making and implementation.

- Gas Re-injection policy-makers should consult and utilize indigenous technological expertise by committing professional ministries, the university-based science/technology departments, the Nigerian Society of Engineers, the Centre for Advanced Social Science Research (CASS), the Nigerian Institute of Social and Economic Research (NISER), the National Office for Technology Acquisition and Promotion (NOTAP), Nigerian Institute of International Affairs (NIIA), the Raw Materials Research and Development Centre amongst others in techno policy-making, research and advocacy. The indigenous university-based expertise involvement in policy-making tends to have the advantage of high expert inputs and more innovative and objective conclusions for technical advice towards the formulation and implementation of more realistic gas re-injection policies. Thus, the Associated Gas Re-injection Policy goals/alternatives should be subjected to scientific and technological gradations. The appreciation of such indigenous expert advice will no doubt lead to adequate and more effective gas re-injection policies in Nigeria.

- There must be a specific science/technology-based regulatory agency on gas flaring issues other than the proliferation of regulatory agencies with overlapping responsibilities. Such a mission-specific gas flaring regulatory agency must always liaise with the Federal Ministries of Science and Technology, Environment, Petroleum Resources, and so on for guidance and

attendant utilization of results of recent researches on science and technology.

- Science and technology advisory committees should be institutionalized in the three arms of government, viz: the executive, legislature, and the judiciary to properly analyze and identify the uncertainties of technology-intensive issues for effective gas reinjection policy-making and implementation.

- Qualified and patriotic Nigerians should be sent to Norway, Venezuela, and Italy to study the theory and practice of gas reinjection technology with a view to replicating it in Nigeria.

- Government should deliberately establish strong and substantial partnership with Petrobusinesses to encourage associated gas utilization projects/programmes through tax incentives and encourage carbon credit trading as well as establish local and international domestic gas markets.

- Government should abolish the option of financial fines as a penalty for breach of gas flaring permit and take a cue from the Norwegian and British models by withdrawing the license of Petrobusinesses as the only penalty for breaches.

- The approach to gas re-injection regulatory policy-making should be citizen participatory in that indigenous experts and vulnerable oil-bearing communities can have their voice in the policy-making and implementation process.

- Government should fulfill its financial commitments to the installation of associated gas re-injection and utilization projects in order to leave Petrobusinesses with no any excuses to flout future gas flare-out deadlines.

- A three-prong model of environmental policy implementation – the judiciary, the Non-governmental Organizations, and the Press should be adopted in Nigeria for the implementation of the Associated Gas Re-injection Policy. This, if done, will make government to account for its actions and inactions through judicial activism.

- More fundamentally, Nigeria's ruling class should develop consciousness in science and technology so as to source for appropriate information in gas reinjection policy-making and implementation. Such science and technology consciousness must start in earnest now or never, as the present President of the Federal Republic of Nigeria, the Minister of the Federal Ministry of Niger Delta, the Minister and the Permanent Secretary, respectively of the Federal Ministry of Petroleum Resources, and the Director-General, NESREA are all indigenes of the Niger Delta Region that bears the brunt of petrobusiness.

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