



GLOBAL JOURNAL OF ADVANCED RESEARCH  
(Scholarly Peer Review Publishing System)

# REAL ASSET DEVALUATION: THE IMPACT OF OIL POLLUTION ON RESIDENTIAL AND AGRICULTURAL PROPERTY VALUES

**Oladejo E.I, Ukah Obiorah & Onyejiaka J.C.**

Nnamdi Azikiwe University, Akwa,  
Nigeria

[estheroladejo2@yahoo.com](mailto:estheroladejo2@yahoo.com), [ukaobiorakingsley@gmail.com](mailto:ukaobiorakingsley@gmail.com) & [c.j.onyejiaka@unizik.edu.ng](mailto:c.j.onyejiaka@unizik.edu.ng)

## ABSTRACT

Global challenges of failing real estate investments, falling market prices of real assets and the steady decline in environmental quality informed the need to study the concept of Real Asset Devaluation. This research was done with particular attention paid to developing countries like Nigeria. The objective of this study was to examine the impact of oil pollution on residential and agricultural property values in Ogoni land. Ogoni land was chosen as the study area due to incessant pollutions in the recent past. It is therefore expected that it would provide the much needed information for this research. The researchers worked with a sample size of 100, randomly selected 25 each from the four local government areas that make up Ogoni land representing a fine blend of both residential and agricultural properties. Field survey, oral interview and questionnaire were used for data collection. Multiple Regression analysis was used to study the relationship between environmental quality and property values. Likert scale was used to analyze the data and Z-test was also used to test the significance of the coefficient of correlation at 5% level of significance. Findings showed that oil pollution had a devastating effect on agricultural and residential property values. The researchers recommends (among others) that immediate and effective action should be taken by the oil companies responsible for the oil spillages in the host communities to clean up the affected areas; while effort should be made to repair all damaged pipelines and replace those that have exhausted their useful life so as to prevent future spillage.

**Keywords:** Devaluation, Real Asset, Niger Delta, Oil Pollution

## 1. INTRODUCTION & BACKGROUND OF THE STUDY

The Niger Delta is an oil rich region located along the coastal area of Nigeria. It is a very densely populated region sometimes called the oil rivers because it was once a major producer of palm oil. The Niger Delta extends over about 70,000km<sup>2</sup> and makes up about 7.5% of Nigeria's landmass. The present day Niger Delta comprises (9) states namely Abia, Akwa-Ibom, Bayelsa, Cross river, Delta, Edo, Imo, Ondo and Rivers state (2004 EST). The Niger Delta has a population of about 31 million people of more than 40 ethnic groups including Bini, Efic, Esan, Ibibio, Igbo, Amang, Oron, Ijaw, Itsekiri, Yoruba, Isoko, Urhobo, Ukwani and Kalabaris; Speaking about 250 different dialects. The Niger Delta can be said to be the most heterogenous socio-political group in Nigeria.

The native inhabitants of this region are predominantly farmers and fishermen. This is influenced by the tropical climate, the rain forest and numerous rivers and Creeks within which the Niger Delta is situated.

The Niger Delta is very rich in terms of biodiversity. The region is known for its dynamic and distinct ecological zones ranging from the mangrove forest and coastal vegetation, the tropical lowland rain forest through to the montane habitats. The abundant flora and fauna that thrive in the region are wonderful features that depict the unique nature of the Niger Delta.

There are basically five distinct ecological zones in the Niger Delta all of which are of high economic and Aesthetic importance.

First on the list is **The Mangrove Forest Coastal Vegetation Zone**. These are a chain of low sandy Island that protect the coast of the Niger Delta. The dominant vegetation is freshwater and occasional small salt marshes. These are beaches with serene atmosphere naturally designed for relaxation and fishing activities. These areas are choice destinations for relaxation and tourism. The second ecological zone of relevance is the fresh water swamp forest zone.



**GLOBAL JOURNAL OF ADVANCED RESEARCH**  
(Scholarly Peer Review Publishing System)

**The Fresh Water Swamp Forest Zone** covers approximately 17,000km<sup>2</sup> or about half of the Delta region. This zone is the region's major source of timber and forest products and contains important, rare and endangered wildlife species.

**The Rainforest Zone** occupies the non-riverine or "upland" area which flank the Niger Delta. This area has largely been cleared for Agricultural purposes.

The vast rainforest has been ingeniously put to commercial Agricultural use by establishment oil palm plantations and rubber plantations which generate revenue on exportation. Subsistence farming also thrives in the region.

**The Derived Savannah Zone** is the commercial nerve centre of the Niger Delta region. The presence of small, medium and large scale industries, (mostly located in industrial estates), residential and commercial properties, health care facilities and educational infrastructure all speak volumes of the economic and socio-political relevance of the Derived savannah region to the Niger Delta.

The fifth region of prominence is the **Montane Zone** which is confined to the north eastern part of Cross River State around Obudu/Sankwala area. The region is notable for its high altitude (approximately 900-1500m above sea level) and is enhanced by floristic diversity in the form of different species of herbs and shrubs. The uniqueness of this ecological zone in terms of its natural resources and biodiversity exclusively makes it one of the important areas with high eco-tourism potentials (NDRMP, 2010).

However the region only came into prominence by the discovery of massive crude oil deposits in the area by shell D'archy (present day SPDC) on Sunday 1<sup>st</sup> January 1956.

Crude oil and Natural gas were discovered in commercial quantity hence, putting an end to the 50years of unsuccessful oil exploration in the country by various companies. This launched not only the Niger Delta but Nigeria into the lime light as West Africa's biggest producer of petroleum.

As a result of the discovery, several multinational companies such as Chevron, Total, NLNG, ELF, Air liquid to mention a few became actively involved in the production of oil and gas. As at 1971, Nigeria had the largest natural gas reserve in the world (Ayuba 2012). From the 1980's till date, crude oil revenue has provided about 80% of Nigeria foreign exchange earnings. The Niger Delta also put Nigeria on the map of economic relevance the world over for the fact that it was estimated to hold about 185trillion cubic feet of natural gas reserve making it the eight largest in Africa (Controls Analysis Brief 2010).

The combined revenue generated by oil and gas production in Nigeria has immensely contributed to the development and sustenance of the Nigerian economy. Hence, the oil and gas sector has been the highest revenue generator for Nigeria's economy from its discovery till date.

In the light of the foregoing, the discovery and production of oil and gas in the Niger Delta has been regarded as a blessing to Nigeria but more of a curse to the oil producing communities in the Niger Delta. The activities of oil exploration and production companies in various host communities have led to pollution of creeks, destruction of farmlands and crops, destruction of aquatic life, atmospheric pollution and various degree of health hazards, mostly as a result of incessant oil spillage. Oil pollution then becomes a major cause of concern to communities within which oil companies carry out their activities as they are the ones that suffer the effect of these hazards.

The cynical disregard for the safety and economic disaster posed by the activities of these oil companies, have left the host communities in situation of utmost misery. Furthermore, the fact that most host communities are bereft of basic social amenities, which is the social responsibility of these oil companies to provide as a way of ameliorating the plethora of damages suffered by these host communities as a result of their activities. The cumulative effect of these incessant spills leaves a hopeless situation, better imagined than experienced.

Ogoni land is located in River state, south-south Nigeria and covers a land mass of approximately 1,050km<sup>2</sup>. The Ogoni people are predominately known for Agricultural practices such as livestock, herding, fishing, slat production, palm oil cultivation and trade. Ogoni land is also richly blessed with crude oil and natural gas which has led to the influx of oil and gas companies, petrochemical and fertilizer refineries over the years. Notwithstanding the fact that revenue generated from oil and gas production in such communities (as Ogoniland) have sustained the Nigeria economy for over 50 years, Ogoni land is a microcosm of the negative effects of oil and gas production on the environment. Agricultural land and residential property values in the Niger Delta have been greatly affected.

Shell Petroleum Development Company (SPDC) has been the major agent of pollution in Ogoni land. Since shell set up its operations in the late 50's, Ogoni land has witnessed more than 9,000 individual oil spills. According to the Nigerian government, there were more than 7,000 spills between 1970 and 2000. The NNPC in its annual report, places the quantity of oil lost in the Niger Delta environment yearly at (2,300)m<sup>3</sup> an average of 300 individual spills.

The air is not left out as it has been severely polluted with dangerous gases such as CO<sub>2</sub> and methane gas. This can be attributed to the presence of two refineries, the petrochemical complex and fertilizer complex in Ogoni land. Also the presence of five (5) gas flaring stations situate in Ogoni. All these contribute to low air quality linked to cancer, asthma and other lung diseases. The cumulative negative effects of all these on both Agricultural and residential assets values can only be imagined. This explains the reason behind the social protests and upheavals witnessed in Ogoni land, spearheaded by late human right activist, author and poet Ken Saro-Wiwa in 1990. Serious agitations have also continued till date.



**GLOBAL JOURNAL OF ADVANCED RESEARCH**  
(Scholarly Peer Review Publishing System)

## 2. STATEMENT OF PROBLEMS

Ogoni land prior to the discovery and production of oil and gas was and still is the place of residence of the Ogoni indigenes and her visitors. A once serene and natural environment where commercial agriculture (such as livestock, herding/rearing/ salt production, oil palm production and trade) thrived. All these have been adversely affected by incessant oil and gas pollution as a result of the activities of oil and gas companies in Ogoni land.

Oil pollution have degraded most agricultural and residential land and have turned hitherto productive areas into waste lands, thereby increasing soil infertility due to destruction of soil micro organism. The resultant dwindling in agricultural productivity has forced farmers to abandon their lands with or without adequate compensation and seek alternative means of livelihood (Ngene 2014). Such lands also become of little or no relevance for real estate development as they become unsuitable for development processes. This has lead to project abandonment in some cases and even collapse of buildings in others, thereby resulting in loss of value of land. The status quo also goes a long way to discourage prospective investors in agricultural and real estate sectors as it instills in them the fear of making a futile investment. The land has become so devastated that their agricultural and residential developments are apparently not feasible and economically not viable. Aquatic life has not been spared as massive oil spills into the numerous creeks and rivers (which were hitherto viable fishing grounds) have led to a sharp decline or total loss of revenue from fishing.

Furthermore, the absence of the basic social amenities such as clean drinking water, electricity, good road network and other infrastructure have greatly depreciated existing agricultural and residential land values and have deterred prospective investments in such areas.

## 3. AIM OF THE STUDY

The aims of this research is to examine the harmful effect of external (environmental) depreciation factors, in this case oil pollution on agricultural and residential property values and also suggest possible ways to mitigate such effects.

## 4. OBJECTIVES OF THE STUDY

The objectives of this research are as follows:

- To identify the causes of oil spillage.
- To identify areas of oil spillage in Ogoni land.
- To analyze the effect of oil spillage on crop/ agricultural productivity and consequently its value.
- To analyze the effect of oil spillage on residential property values.
- To proffer solutions to the control of oil spillage and restoration of agricultural land and residential land values.
- To analyze the concept of external depreciation factors on agricultural and residential property values over time.

## 5. 5 RESEARCH QUESTIONS

The following questions were posed

- What are the causes of oil spillage in Ogoni land?
- Which areas are affected by oil spillage in Ogoni land
- What are the solutions and control for management of oil spillage and oil pollution?
- How does oil spillage affect the health of Ogoni people?

## 6. SCOPE OF STUDY

This covers a detailed and comprehensive study of the impact of oil spillage on agricultural properties and residential property values with particular reference to Ogoni land in Rivers State. As outlined in the background of study the Ogoni people have suffered a plethora of problems due to oil spills and gas flaring that has mostly affected their farmlands and places of residence.

**Real Asset Devaluation:** for the purpose of this work, the concept of Real Asset Devaluation (R.A.D) is defined as the resultant and continuous loss in the value of Real Estate (Assets), arising from the cumulative effect of specific Internal and External factors/elements of depreciation over time.

For the purpose of this work, the words "Real Assets" and "Real Estate" shall be used interchangeably.

## 7. LITERATURE REVIEW

### 7.1 The Concept of Land Value

The word "Value" is the basis of the word "Devalue". Therefore, the study of Devaluation would not arise if the concept of Value was non-existent. Furthermore, a thorough understanding of the concept of land value will pave way for the appreciation of the Real Asset Devaluation concept.

The word "Value" has an array of meanings, which vary from person to person depending on the perspective from which it is viewed. The Oxford Advanced Learner's Dictionary of current English 8<sup>th</sup> Edition defines Value as how much something is worth in money or



other goods for which it can be exchanged. To the accountant, Value is the monetary worth of an asset, business entity, goods sold, service rendered or liability or obligation acquired. To an Economist, Value is the worth of all benefits and rights arising from ownership. To a layman, one could describe Value to mean the measure of utility and satisfaction derived from the possession or ownership of an item.

However, in real estate parlance, Value is mostly associated to land or property. It has different meanings depending on the kind being referred. The types/kinds of value include Open market value, forced sale value or liquidation value, Investment value, value-in-use, rental value etc. In the light of the foregoing, the commonly referred meaning to value is the Open market value (OMV). According to the International Valuation Standard (IVS), **Open market value** is the estimated amount for which an asset or liability should exchange on the valuation date between a willing buyer and a willing seller in an arm's length transaction, after proper marketing and where the parties had each acted knowledgeably, prudently and without compulsion.

This means that for a value to be regarded as open market value, it must reflect the monetary worth of the subject asset as at the time, date of valuation and must be between parties who have knowledge of the existing market state with regard to the market forces and trends. Also, the parties must not have or act like they have any relationship as this may induce a value which maybe higher or lower than the Open market value.

In addition, there must be adequate time given for the property to be advertised so as to attract willing parties/ investors and not those who are compelled to do so. The major factor that determines value of a commodity is the market forces of demand and supply. A basic economic principle tells us that when demand for a particular commodity is higher than its supply, value is created *ceteris paribus*. For a commodity (in this case real asset) to be of high demand there has to be some favourable factors which lead to its demand. This means that the more the advantageous factors enjoyed by a property, the higher the demand for that property. There are several factors that influence the value of properties negatively or positively, they are analyzed below;

## 7.2 Factors That Influence Property Values

### 7.2.1 Demand and Supply

This is a principal factor that determines the value of real estate. In simple terms, real economic principle states that when demand is higher than supply, value will increase. This implies that when demand for real assets is higher than its supply, the value of such assets will increase *ceteris paribus*.

However, Abiodun (2013) opined that this works in various ways when applied to real estate. The value of a specific area can begin to increase as a result of infrastructural development. For instance, the demand pressure on such an area then causes the value of real estate in such an area to increase. Coupled with other factors, the value of such an area could reach a point where only investors with deep pocket can afford it; thereby forcing other people and businesses to begin to explore nearby alternatives that cost less. This trend then causes the value of the now high end area to slow down in appreciation. This will now cause the value of alternative areas to increase.

In essence, whenever there are advantageous factors or circumstances enjoyed by a property, there is every likelihood that such factors or circumstances would lead to increase in demand and then consequently increase in value.

### 7.2.2 Government Policies and Programmes.

Different Policies and programmes of the government have different effects on the law of demand for real estate and its supply. Government policies may have negative or positive effect to property value. For instance, in a bid for the government to increase revenue, they will decide to target real estate as the cash cow by increasing taxes, bills, fees and other associated cost on real estate transactions, outgoings and running cost of real estate increases thereby leading to a reduction in net income; thus discouraging existing and prospective real estate investors. Several writers have opined that multiple taxation on investments leads to a drastic reduction in returns. Government policies can also considerably be advantageous to real estate development and value. This can be seen in a situation where the government grants tax reliefs or exemptions on some property based taxes such as (probate tax, capital gains tax, capital transfer tax etc.) in a certain area or layout, it would encourage existing real estate investors and attract new investments to the area. This will therefore increase the value of land and landed developments in the area over time.

### 7.3.3 Infrastructural Development

This is another factor that greatly influences the value of real estate in a particular area. There seem to be a direct relationship between the level of infrastructural development and real estate value. Increase in real estate value has been attributed to a high level of infrastructural development in the subject area. Basic infrastructures required to enhance property value in a particular environment include good road networks, electricity, portable water supply, waste disposal, drainage, hospitals, schools, banks etc. However in this part of the world, infrastructural development is often irregular and project time frame uncertain Abiodun (2013).

### 7.2.4. Location

The impact of location in the housing market is very significant. Since housing units are fixed in location, they differ in terms of their surrounding and the kind of community in which they are situated Aluko (2011). Factors such as proximity to entertainment and



shopping facilities, recreation areas, good schools, health care facilities and other social amenities will bear weight on how the property is viewed and valued by potential investors. Goslet in Remax (2013) opined that proximity of a property to positive features will have investors viewing the property in a positive light, whereas proximity to negative features such as presence of heavy industries in an agricultural and residential neighbourhood with a history of environmental hazards will definitely affect the property value negatively.

Location as a factor that influences property values is a broad concept and has been the subject of several research and analysis by numerous scholars. Various attributes of location have been seen to have varying significance to different land uses. For instance, the proximity of an industrial land use to source of raw materials and to the market is of high significance to such industrial property value. In other words, the nearer an industry is located to its source of raw materials and the market for its finished goods or consumers of its services, the higher the value of such an industrial land use and vice versa. In the case of residential land uses, locational features such as nearness to place of work, place of worship, school, shopping areas, health and security institutions enhances its value. Agricultural land values are enhanced by easy access to and from the farm and market place, it is enhanced by soil fertility and topography. Location therefore has an overwhelming influence on the value of a real investment.

### *7.2.5. The Condition of the Neighbourhood*

Goslet (2009) posited that apart from the physical state of a property, the condition of the neighbourhood in which it is situated has the potentials to either elevate or bring down the property value. Neighbourhood conditions exert external influence on the value of a property, taking property value out of the direct control of property owners. However, the general upkeep and maintenance of a neighbourhood by its inhabitants (which include property owners and other occupants) is important to the value of the properties in that area.

According to Abiodun (2013), good neighbourhood organization has been proven to contribute to an increase in the value of real estate. Humans are naturally attracted to an environment that is characterized by serenity, safety and order, where you have individuals of like minds and interests living together and are able to organize themselves, developmental works and arrange security.

Such areas can be likened to well planned residential layouts and reserved estates which are family friendly. In such organized neighbourhood, the safety of its occupants is assured and all the amenities necessary to lead a comfortable and decent life are made available. Due to the limited supply of real estate situated in such areas especially in Nigeria, coupled with the high demand for the existing ones with such neighbourhood qualities, such properties situated in the right kind of neighbourhood witness a high level of value appreciation.

On the other hand, in an unplanned neighbourhood, several unfavorable conditions exist such as urban blight, dilapidation, obsolescence and slum. Not only that such a neighbourhood is bereft of basic amenities that support good living, they are also the abode of refugees, immigrants and low income earners who take advantage of such squalid neighbourhood. Housing units in such a neighbourhood is characterized by poor designs, inadequate lighting and ventilation, functional and physical obsolescence etc and therefore commands less value.

### *7.2.6. Inflation*

Whenever there is increase in prices of commodities in a country, it has far reaching effects on different sectors of that country's economy. Inflation has a significant direct and indirect effect on property value. For instance, when the cost of building materials are high, it increases the cost of building new houses and also increases the cost of renting old ones, due to scarcity of new buildings brought about by high cost of erecting new structures, the supply of additional housing units will be limited and then, the demand for the few new ones and the older ones will increase. This will ultimately result in the increase in the cost of renting new and old houses. When investors spend more money to build houses, they would naturally increase the cost of renting such houses so as to recoup their capital. Due to the dynamics in real estate, one finds out that the additional value induced by the inflation often increases beyond the rate of inflation. This is why real estate is said to serve as a hedge against inflation.

### *7.2.7 Security and Safety of Investment and Investors*

It is true that no meaningful developmental project can go on if the safety of the project and its executors are not guaranteed. Security of investments goes hand in hand with the safety of the key players whose activities give rise to the value of such an investment.

Insecurity is one single factor that is capable of paralyzing the social and economic life of an area. An environment that does not guarantee the safety of its inhabitants cannot sustain economic activities and by extension, real estate development. Once investors feel threatened due to rising insecurity, it is most likely that such investors will relocate to areas where they feel safe to carry out their business activities; thereby leading to project abandonment and collapse of economic activities. A vivid example of this situation is the case of various multi-national companies abandoning their plants, folding up and pulling out of the Niger Delta region of Nigeria during periods of incessant hostilities by militants in that area. Another example of this scenario is the mass emigration of internally displaced persons (IDPs) from the North Eastern part of Nigeria due to heightening insecurity in that part of the country, leaving behind their homes and other real properties. This scenario leave many properties vacant with little or no desire to reside in them for





fear of insecurity thus, leading to more supply of housing units than demand for them. The result of this is a drastic loss of value in real terms.

On the other hand, once an investment is feasible and possesses all the necessary criteria for viability, it then invariably means that such an investment is capable of yielding income (which is the bed-rock of investment security). In essence, once an environment is investor and investment friendly, the probability of such investments being valuable is high.

### 7.2.8 The Physical State of the Property

Finally, the physical state of a property goes a long way in determining its own value (*ceteris paribus*). A newly built and tastefully furnished apartment that meets up with current standards in technology, functional utility, design, durability, safety and maintenance would certainly command a higher value than another building that has depreciated physically and is functionally obsolete. It is worthy of note that all but the physical state of a property are externally propelled (controlled) factors which influence property values. These factors have profound positive and negative influence on property values depending on the perspective from which it is viewed. More emphasis will however be placed on those factors that are inimical to property values and how best to mitigate their effect. It is agreeable that factors that have negative influence on property values all fall under one class of depreciation or the other.

## 7.3 Depreciation

Depreciation can commonly be defined to mean the gradual wearing down of capital assets and its implied deterioration in value. However, depreciation is not limited to physical wear and tear as implied the common definition of depreciation.

Litchfield (1974) argues that capital goods may become un-usable due to depreciation which occurs through natural decay as with the fabric of building, or through wear and tear as with plants and machinery or through obsolescence as when factories are no longer suitable for modern production.

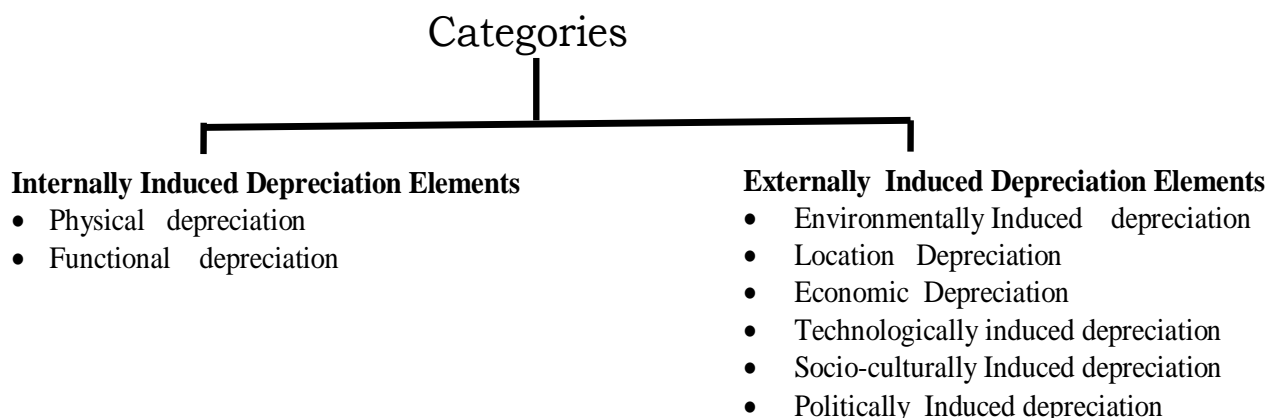
Nevertheless, in the context of this work, one would define depreciation as all unfavorable conditions, situations or circumstances that lead to a consequential loss in the value of capital assets. Such conditions could be a state of wear and tear as in plant and machinery, deterioration in building fabrics or a state of obsolescence. It further includes circumstances such as insecurity and environmental degradation; all of which have consequential negative effects on the value of capital assets.

### 7.3.1 Classification of Depreciation

Many writers such as May (1968), Ring (1965), Ifediora (1993) and Baun (1991) classified depreciation into four (4) different types namely; physical deterioration, functional obsolescence, economic obsolescence and environmental obsolescence. Ogbuefi (2009) summarized the classifications thus..

- Physical Depreciation
- Functional Depreciation
- Economic Depreciation
- Locational Depreciation
- Technological Depreciation
- Socio-culturally induced Depreciation
- Politically induced Depreciation
- Environmentally induced Depreciation Baum (1991)

One can further categorize the above classification into two broad categories viz internally and externally induced depreciation.



**Fig. 1 Classification of Depreciation**



**GLOBAL JOURNAL OF ADVANCED RESEARCH**  
(Scholarly Peer Review Publishing System)

The internally induced depreciation elements are those elements of depreciation that are found on the capital asset itself whereas the externally induced depreciation elements are those elements that exert external influence on the value of the capital asset. The major difference between the two categories of depreciation is that while the effects of the internally induced depreciation can be mitigated with ease through rehabilitation and/or refurbishment, externally induced depreciation elements are not under the direct control of the property owner or its users/occupants; therefore, its effects are not easy to correct. Externally induced depreciation elements arise as a result of external factors or forces that continue to deteriorate asset values if no decisive measure(s) is taken to forestall its effects.

Experience has shown that this phenomenon has posed a serious challenge to real estate value and development. Therefore there is need to understand the relationship between depreciation and loss in value so as to proffer lasting solutions when the need arises. This leads to the study of the concept of Devaluation as regards to real estate capital assets.

### 7.3.2 Real Estate Devaluation

The word “Devaluation” like many other English words is a semantic that has an array of meanings depending on the perspective from which it is viewed.

In modern Economics, Devaluation is regarded as a monetary policy in which the value of a currency is deliberately reduced with respect to those goods and services or other monetary units which that currency can be exchanged. A recent example is the devaluation of the Naira in favour of the U.S Dollar by the CBN as a monetary policy in 2015.

This is in contrast with depreciation which is used to describe the decrease in a currency’s value due to market forces and not a government or Central Bank policy action.

In appraisal, the word “**Devaluation**” is used interchangeably with “**depreciation**”, to describe what actually is a method of calculating depreciation (Straight line method).

Nevertheless, in the context of this work, one would assert that **depreciation** and **devaluation** are two separate but closely related phenomena. This is in the sense that while the former is a “cause”, the later is its “effect”. This means that Real asset Devaluation (loss in value of real assets) is only an effect, caused by the action of elements of depreciation.

*Having established the foregoing, the concept of **Real Asset Devaluation (R.A.D)** can therefore be defined as the resultant and continuous loss in the value of Real Estate (Assets), arising from the cumulative effects of specific Internal and External factors/elements of depreciation.*

### 7.3.3 Advantages of the Study of Real Asset Devaluation

The concept of Real asset Devaluation seeks to analyze and establish the relationship between factors of depreciation prevalent in a particular locality and their cumulative effects on the values of existing and prospective real estate investments, over a period of time. Equipped with this knowledge, the real asset investment analyst will be better poised to proffer a lasting solution to each problem of real asset devaluation he is faced with.

The study of real asset devaluation also better position a real estate investment analyst to advice an investor properly when making investment decisions with regards to investments feasibility, viability and sustainability overtime.

Furthermore, the knowledge of real asset devaluation helps Real estate investment consultants to advice clients on requisite steps to be taken in order to ameliorate the effects of an already devalued property which may include resorting to alternative use or other mitigation measures available at the particular point in time.

### 7.3.4 Implication of Real Asset Devaluation

Real estate investment analysts are faced on daily bases with the herculean task of tackling the challenges of failing real estate investments, falling market prices of real estate and steady decline in the quality of neighborhoods. Needless to say that loss in value of real assets (aside from physical and functional depreciation) are caused by one or more externally induced factors of depreciation. It becomes imperative to critically analyze the situation in order to determine those individual factors of depreciation that are responsible for the decline in real estate values in each given situation and environment.

Even though depreciation factors could be studied in isolation of each other, their cumulative effect on real assets is loss in value (Real Asset Devaluation (R.A.D.).

A devalued estate can be likened to a sick patient that needs treatment. Examinations, tests and analysis which would provide a basis for inferences to be made in order to determine the true cause of such ailment will be carried out. When the main cause of the ailment is determined, the appropriate medication can then be administered to improve the patient’s state of health. In the same vein, whenever there is a decline in the value of real asset investment and benefits from real investment fall short of expected returns then it is an indication that all is not well with such investments. It could be that expectations are too high or that some factors unfavorable to the



investment have caused the decline, however, most times the latter is the situation. At this stage, several questions come to mind in order to tackle the situation effectively.

#### A. What Factor(s) Have Caused Real Asset Devaluation?

One or more factors can lead to the loss in value of real estate investment. Each case of real asset devaluation is peculiar and distinct from another, series of investigations and analyses are required in order to ascertain which factor(s) of depreciation has caused the subject real estate to suffer a loss in value. The factors could be either internally induced or externally induced factors. Internally induced agents of devaluation include physical and functional depreciation. Externally induced agents of devaluation could include locational, economic, socio-political and environmental induced agents of depreciation.

#### B. What is the Extent of the Effect?

After the cause(s) of devaluation has been determined, the next step is to ascertain the level of damage such a factor has done to the real property or the potential effect of such situation to existing and prospective real estate investment. The extent of damages to property value cannot be comprehensively assessed by mere eyes judgment, an inquiry or research is also necessary to analyze the financial and social effect. The effect maybe localized, that is when the agent(s) of devaluation affects a subject real estate or a small group of properties, its effect can also be widespread such as when its effect is felt by a large area, town, city, region or even country.

The effect can be short term, mid-term or long term on real asset values, externally induced real asset devaluation agents most times have medium and a long term effect on real asset values. Due to their nature, they are most times outside the direct control of real asset owners and therefore not easy to forestall.

#### C. Can the Effects of Devaluation be Mitigated or Managed?

While some of the negative effects of externally induced devaluation agents can be mitigated, others can be managed in the long term, a few can have irrevocable effect on real estate utility and value. Examples are lands destroyed irreparably by earthquakes, volcanic eruption or atomic bomb. Such land loses all its economic value and are said to have been struck with sterility.

An example of **localized** real asset devaluation is when a telecommunication must be erected just adjacent to a residential property, this could stir up reluctance by prospective tenants to take up such accommodation for fear of exposure to harmful radiation. This in turn would lead to a void in property and loss of expected revenue no matter how centrally located such property is.

An example of **widespread** real asset devaluation could be the drastic deterioration in residential properties in major cities of North Eastern Nigeria due to the activities of Boko Haram insurgents from 2009 till date. The reason why man seeks shelter is to be protected from dangers and once this is not guaranteed in a particular environment, its only natural that there would be migration towards areas that are safer for habitation, thus rendering the previous place of habitation desolate with little or no residential value. This is exactly the scenario presently experienced in North Eastern Nigeria. In this case, insecurity as a socio culturally induced factor of depreciation is the agent of devaluation to real properties in that region.

#### D. Finally What Can be Done to Either Mitigate or Manage the Situation?

Every case of real asset devaluation is peculiar in nature, therefore the type or cause of the devaluation will determine the appropriate measure to be taken in order to ameliorate the situation. Sadly, the effects of externally induced devaluation continues if there are no pragmatic measures taken to either forestall, mitigate or manage the situation. Most times a synergy between public participation and government intervention are required to combat socio political anomalies (maladies) negatively affecting value of real estate investments. Change of use can also be used to improve the value of a devalued real estate. A typical example that approximately elucidate wide spread real asset devaluation in all its characteristics is the deterioration in neighbourhood quality accompanied by decline in residential and agricultural land values in many oil producing communities in the Niger Delta. This is as a result of oil exploration and exploitation activities by oil companies in such communities. Land, water and air pollution are as a result of oil spillages and gas flaring has led to low quality of life and diminishing economic prospect in terms of real estate in such host communities.

### 7.4 Meaning of Pollution

Pollution is a very wide topic. It is also a very sensitive and controversial issue because most of the sources of pollution are from persons and corporate bodies that possess economic power and influence. It is wide because it has various aspects such as water, land, air and noise pollution.

**Pollution**, according to Longman Dictionary of contemporary English “is the act of making the air, water, and soil dangerously impure or unfit for use”. Alan (1974) saw pollution as “... any direct or indirect alteration of the physical, thermal, biological or radioactive properties of any part of the environment, by discharging, emitting or depositing wastes or substances so as to affect any beneficial use, adversely to cause a condition which is hazardous or a potential hazard to public health, safety or welfare or to animals, birds, wildlife, fish or aquatic life and or to plants”.





**GLOBAL JOURNAL OF ADVANCED RESEARCH**  
(Scholarly Peer Review Publishing System)

FEPA (1991) defines pollution as “Generally, the presence of matter or energy whose nature, location or quantity produces undesired environmental effects.

Pollution is a phenomenon which occurs wherever potential harmful substances are released into the environment (Uchegbu 1998).

Oladejo (2015), defined pollution as “the addition from either man-made or natural resources of any foreign substance to the air, water and land in such quantities as to render such resources unsuitable for specific or established uses”.

Furthermore, Pollution can be defined as a discharge of materials (biological, chemical or physical nature) or energy into the water, land or air, that may cause acute (short-term) or chronic (long-term) detrimental effects on the earth’s ecological balance or that lowers the quality of life of man, plants and the entire ecosystem.

From the various definition stated above, one can define pollution as an undesirable change in the physical, chemical or biological characteristics of land, air and water that may harmfully affect human life or that of other desirable species, industrial processes, living conditions and cultural assets.

#### *7.4.1 History of Pollution/Oil Spill in Nigeria*

Oil spill incident have occurred in various parts and at different times along our coast. Some major spills in the coastal zones are the GOCON’s Escravos spill in 1978 of about 300,000 barrels and Texaco Funiwa-5 blow-out in 1980 of about 400,000 barrels. Other oil spill incidents are those of the Abudu pipeline in 1982 of about 18,818 barrels. The Jesse fire incident which claimed about a thousand lives and the Idoho oil spills of January 1998, of 40,000 barrels. The mark publicized of oil spills in Nigeria occurred on January 17<sup>th</sup> 1980 was a total of 37million liters of crude oil as a result of a blow out at Funiwa-5 offshore station. Nigeria’s spill war, and offshore well blowout in January 1980 when an estimated 200,000 barrels of oil (8.4million U.S gallons) spilled into the Atlantic ocean from an oil industry facility and that damaged 340 hectares of mangrove [Nwilo and Badejo, 2005]

According to the Department of Petroleum Resources [DPR], between 1976 and 1996 a total of 4647 incidents resulted in the spill of approximately 2,369,470 barrels of oil into the environment. Of this quantity, an estimated 1,820,470 barrels (77%) was lost to the environment. A total of 546,060 barrels of oil representing 23.17% of the total oil spill into the environment was recovered. The heaviest recorded spill so far occurred in 1979 and 1980 with a net volume of 694,117.13 barrels and 600,511.02 barrels respectively. Available records for the period of 1976 to 1996 indicated that approximately 6% respectively, of total oil spilled in the Niger Delta area, were in land, swamp and offshore environments. Also, between 1997 and 2001, Nigeria recorded a total number of 2,097 oil spill incidents without replacements, about 40,000 barrels of oil spilled into the environment through the offshore pipeline in Idoho.

Sabotage is another major cause of oil spillage in the country, some of the citizens of this country in collaboration with people from other countries engage in oil from them. SPDC claimed in 1990 that sabotage accounted for more than 60% of all oil spills at its facilities in Nigeria, stating that the percentage has increased over the years. (SPDC, 1996)

Pirates are stealing Nigeria’s crude oil at a phenomenal rate. Funneling nearly 300,000 barrels per day from our oil and selling it illegally at the international trade market. Nigeria lost about N7.7billion in 2002 as a result of vandalism of pipelines carrying petroleum products. The amount, according to the PPMC, a subsidiary of NNPC represents the estimated value of the product wasted in the process.

Illegal fuel siphoning as a result of the thriving black market for fuel product has increased the number of oil pipeline explosions in recent years. In July 2000, death of 250 people, an explosion in Lagos in December 2000 killed at least 60 people. The NNPC reported 800 cases of pipeline vandalism from January through October 2000. In January 2001, Nigeria lost about 1billion in oil revenue due to the activities of vandals . The government estimates that as much as 300,000 bb/d of Nigerian crude is illegally bunkered (freighted) out of the country.

#### *7.4.2 The Causes of Oil Pollution (Spillage)*

The causes of Oil spillage or pollution could be natural or manmade. The major causes of Oil spillage are

- a. Corrosion
- b. Leakage
- c. Human error (operator/maintenance error)
- d. Sabotage
- e. Faulty facility (equipment failure/ malfunction)
- f. Blow-out/explosion
- g. Rupture
- h. Accident from third party/damage during construction (engineering/drilling activities)
- i. Natural causes; rain, flood, earthquake etc



#### 7.4.3 Effects of Oil Pollution on Landowners

- a) Loss of agricultural land: When oil pollution occurs on land (soil), it increases the availability of toxic elements in the soil to the detriment of host plants and certain mineral and nutrients required by plants for proper growth are paralyzed. Heavily polluted soils remain infertile and unproductive for about ten or more years until the soil loses its toxic effect by degradation. According to scientific reports by soil scientists, the pollution in the study area has hampered plant growth as oil deposited on leaves of plants penetrates into the leaves and reduces transpiration and photosynthesis.
- b) Damage to crop and economic trees: The occurrence of the oil pollution affects various types of crops such as cassava, cocoyam, vegetable, okro, plantain, pepper etc. Also economic trees such as raffia palm, oil palm, Indian bamboo, native pear, soft and hard woods were affected thereby denying the land owner of the use of these economic resources.
- c) Pollution of drinking water: Imerbore and Adeyemi examined the seriousness of oil pollution which already exist in the area of water quality. The study observes that the network of pipelines are sufficiently dense and ramifying to affect water quality all over the Niger Delta. The surface water bodies of most oil producing communities have been polluted by hydrocarbon pollutant from streams. Water supply for domestic use usually in oil producing host communities have become increasingly difficult because their primary source of water which comes from surface water is already polluted due to oil spillage.
- d) Disturbance to fishing rights: The land owners due to the occurrence of the oil spills have their fishing activities disrupted. This is in two aspects; Firstly, fishing business was completely paralyzed during the early period of the oil spill because of the concentration of crude oil on the surface of the water and Secondly, the spill chokes fishes to death and the survivors would migrate from the catchment area. In both cases, those who depend on fishing for their livelihood are drastically affected as the financial returns are not forthcoming because of the concentration of the oil spill on the aquatic environment. Besides, fishing nets, baskets, fish traps, fishing ponds etc that are affected, Environmental scientists opined that total recovery from the effects of oil spillage on the affected area would last for 30 years.
- e) Social Effects of Pollution: A hitherto vibrant social life of a community can suddenly be halted in the event of oil spillage. The vibrancy or dullness of peoples social life is controlled by the economy. The destruction of the common business of the people such as fishing or crop farming by oil spillage spells doom on their social life. For instance, most youths and women have become jobless since their local economic system of fishing is no longer suitable thus social life of the people is disturbed.
- f) Psychological Effects of Pollution: Psychological incapacities are common in oil spillage environments. There is no gain saying that man's existence cannot be severed from his living environment. Therefore any encroachment on his right to his environment will be a source of worry to him and this will undermine his psychological efficiency. An example is the destruction of zinc roof. Houses with zinc roof that are close to the location of the spill do not last for years before they become corroded. This is different from other areas where zinc roof last for at least 10 years. This is a common trend that is also observed in other parts of Niger Delta where extraction is also taking place.
- g) Health Effects of Pollution: Oil spillage is always harmful to human health and as well as animals. Humans or animals may die on the consumption of food containing oil spills. The most worrisome aspects of the spillage in the study areas is the rise and occurrence of certain ailments that were previously unknown in the area. It has been reported that there is a correlation between exposure to oil pollution and the development of health problems. In a recent research report released by a group of scientists from the faculty of pharmacy, University of Lagos, it was observed that water samples collected from sea, river, boreholes, lagoon, beach and others from Niger Delta region indicates that 70% of the water in the area contains a chemical called Ben200 pyrene with high concentration of 0.54 to 4ug per liter, far above the World Health Organization (WHO) recommendation of 0.7ug/liter for drinking water.

The effect is that those drinking from such water or eating the marine creatures such as fish, oysters, periwinkle, etc automatically take in high levels of cancerous chemicals. Other diseases associated with the cancerous chemicals include respiratory problems, skin diseases such as rashes and dermatitis, eye problems, gastro intestinal disorder, water borne diseases and neuronal problems associated with unhealthy diet.

#### 7.4.4 Effects of Oil Spillage on Land Values

As already highlighted, land connotes both the bare or physical land and other improvements attached therein that is, both natural and manmade environment. Thus, Ratcliff (1978) referred to "land value as not only being the value of the bare site or land but also the value of man-made improvements attached or appurtenances". Oil spillage usually cause great damage to life and property as well as the land (soil and vegetation), and if it occurs in seas or rivers, marine lives and other aquatic organisms are affected. Crude oil and petroleum products are extremely complex mixtures of different hydrocarbons and related substance, some of these materials are known to be highly toxic and carcinogenic to marine life and the consumers.

The effect of the pollution generally include loss of soil fertility which renders the soil unfit for agricultural food production thereby leading to low productivity, loss of wildlife etc. The frequent crude oil spillages in the Niger Delta region and the oil producing area of the country as well as the consequent adverse effects on all forms of life has rendered most of these areas barren and abandoned.

The principal effect on the aquatic environment are loss of aesthetic value of beaches due to coverage by oil slicks, loss of fishing rights and other uses of water, danger or killing of economic trees and crops, interference with vital processes such as photosynthesis.



Despite this, oil spillage has adverse effect on property values. The condition of the properties deteriorate significantly, corrosion caused by the pollution also affects steel members. Concrete floors and cement screeds within the study area were also affected by chemical agents/ effluents, particularly those containing carbonate materials and hydrocarbon. All these have profound negative influence on the price, value and worth of real estate investments.

#### **7.4.5 Effect of Oil Spillage on the Host Community**

1. Destruction of marine and aquatic life as a result of pollution of creeks, rivulets, channels and swamps.
2. At high tides, places not initially affected are affected; hence the fertility level of the area affected is reduced.
3. Degrading of the environment.
4. Injurious affection that is, loss of fishing right throughout the duration of the pollution period.
5. The inhabitants suffer from health hazards due to pollution of their source of drinking water.
6. Loss of lives and property.

### **7.5 Managing Oil Spills**

In Nigeria several laws and policies have been put place in managing oil spills, These laws and policies are:

#### **7.5.1 Oil Pipeline Act (OPA) CAP 338 of 1990 LFN**

The Oil Pollution Act of 1990 (OPA1990) is responsible for many of the nations improvements in oil spill prevention and response. OPA provides guidelines for Government and industries on oil spill prevention, mitigation, clean up and liability. The major items of OPA 1990 were targeted at reducing the number of spill followed by reducing the quantity of oil spilled. OPA 1990 also created a comprehensive scheme to ensure that sufficient financial resources are available to clean up the spill, and to compensate persons whose properties are damaged by the spill. It also ensures that the Federal Government's response systems was adequately prepared to manage the impact of oil spill that occur, and mandate the industry to implement prevention and preparedness measures.

Furthermore, the OPA also mandates enhancement of national response system, and development of area contingency plan.

#### **7.5.2 National Oil Spill Detection And Response Agency(NOSDRA)**

A National oil spill detection and response agency (NOSDRA) has been approved by the Federal Executive Council of Nigeria. The Ministry of environment which initiated the agency, has also forwarded to the Federal Executive Council for approval of the review of the draft national oil spillage contingency plan (NOSCP) which the agency would manage (Alexander Gas Oil Connection, 2006), the establishment of the contingency plan. The agency was in compliance with the national convention of oil pollution preparedness, response and corporation (OPPRC 90) to which Nigeria is a signatory. The draft bill on NOSDRA has been forwarded to the National Assembly for deliberation and enactment into law.

Apart from intensifying effort towards compliance monitoring and enforcement of oil and gas regulations and standards, the Ministry is also mounting pressure on the oil and gas operation for gas flaring. Effort is also being made according to the source, to ensure the use of environmental friendly drilling fluid and wind system (Alexander Oil and Gas Connection, 2006).

#### **7.5.3 The Niger Delta Development Commission (NDDC)**

To reduce the rate of oil incident along the Nigeria coast particularly as a result of vandalism, the Federal Government through an Act of the National assembly in 2000, passed into law the Niger Delta Development Commission (NDDC). The act among other things established a commission to carry out the following three tasks:

- Caused the Niger Delta to be surveyed in order to ascertain measures, which are necessary to promote the physical development of Niger Delta area.
- Prepare plans and schemes designed to promote the physical development of Niger Delta area.
- Identify factors inhibiting the development of Niger Delta and assist the member states in the formation and implementation of policies to ensure sound and efficient management of the Niger Delta.

### **7.6 Oil Spill Cleaning Operation**

Natural degradation of huge amount of crude oil takes its time. However, as long as the oil continues to float over the water surface, it harms the aquatic life and as such cleaning up of all oil spills becomes very important. This is done as follows;

#### **7.6.1 Confining the oil spill to a limited area:**

It is much easier to handle oil spill if it is confined to a small area, attempts are also being made to prevent the oil slick from reaching the shore line or a shallow area as these regions are more profoundly affected. These regions also have maximum diversity of life forms.

#### **7.6.2 Removal of Oil from Water Surface**



GLOBAL JOURNAL OF ADVANCED RESEARCH  
(Scholarly Peer Review Publishing System)

Oil on water surfaces is usually sucked up with the help of skimmers. Skimmers are mechanical device which remove the top layer of the contaminated water. Burning of the oil on the surface of the water has generally been found to be less successful because more volatile fractions evaporate quickly while water below removes heat faster and the fire extinguishes. Besides, burning of oil slick leads to extensive air pollution.

### 7.6.3 Use of Absorbents

Absorbents also facilitates an oil slick cleanup operation, they absorb the oil and prevent it from spreading further. Cheap natural material saw dust, pine bark, peat moss, straw or synthetic absorbents like polythene, polystyrene, polyurethane etc are spread over the layer. A large quantity of oil can be removed from the sea surface when these materials are removed from the water.

### 7.6.4 Treatment of the Crude Oil with Dispersants

Dispersants are chemical mixture which causes oil to disperse and spread in the same manner as soap remove oil and grease from one's hands, it contains a surfactant top mix which penetrates the oil, and turbulence causes the formation of emulsion with stabilizer which prevents the emulsion from water. Dispersion is formed and this increases the slick surface and effective in diffusing the crude oil. The process of microbial degradation is also speeded up. However, dispersant contain chemical which may be harmful to the marine life while emulsifying the oil.

## 8. RESEARCH METHODOLOGY

### 8.1 Research Design

Field survey research design was adopted for this research. Interviews and personal observation were impored in collecting the requisite data. Questionnaire was designed and distributed to residential property owners in the selected towns in Ogoni land to find out the impact of oil pollution on agricultural property and residential property values.

### 8.2 THE RESEARCH POPULATION

Residential and Agricultural properties form a subset of the stock of real properties in Ogoni land like in most developing countries. There is no strict segregation and concentration of this category of properties in particular layouts in urban towns. Residential and Agricultural properties are especially the sub-class of our interest. Residential and Agricultural owners will also be included in order to generate reliable data that will be used for generalization of findings. The population of the area according to 2006 national population census was put at 832,000.

### 8.3 Sample Size

As stated earlier, residential and agricultural real estate which is the population of our interest are scattered in various towns within Ogoni land. As such in selecting our sample size, effort was made to incorporate all the towns in order to generate a reliable data that will be used for generalization findings. In this regard, Ogoni land was stratified into its 4 constituent local government area which are Eleme, Gokana, Khana and Tai. Random sampling method was used to select 133 residential/ agricultural property owners cutting across each of the constituent local government areas.

Using Yaro Yamane method of determining sample size for a finite population it is given thus;

$$n = \frac{N}{1 + N(e)^2}$$

Where

n = the sample size

N = the finite population

e = level of significance

I = Unity (a constant)

Given that

N = 133

e = 0.05

$$n = \frac{133}{1 + 133(0.05)^2}$$

$$n = \frac{133}{1.13325}$$

$$n = 100$$

### 8.4 The Study Area

The study was conducted in Ogoni land. Ogoni land is a region covering some 1,000km<sup>2</sup> Ogoni kingdom is made up of four LGA's which are Eleme, Gokana, Khana and Tai.

The occupation of Ogoni people includes farming, fishing, salt production and petty trading. They are predominately Christians by religion, though some fractions of the study area practice African Traditional Religion.

### 8.5 Sources of Data

The materials used in this study were collected from both primary and secondary sources. The primary data include evidence of rental values, open market or capital values of residential real estate which were sourced through questionnaire and oral interview with the



**GLOBAL JOURNAL OF ADVANCED RESEARCH**  
(Scholarly Peer Review Publishing System)

real estate professionals and estate agents. Secondary data was collected through related published and unpublished literature on investment, statistical books, estate journals, seminar papers, newspaper and textbooks.

## 8.6 Data Collection Procedures

Data collection procedures used in collecting information for the study are questionnaire, interviews and field observation.

## 8.7 Data Analysis Technique

Data was analysed using Pearson Product Moment correlation, chi-square and Anova. As stated earlier, the focus of this study is one (1) No 1bedroom flat for residential properties and 1 plot of land measuring 465m<sup>2</sup> which can either be used for agricultural practices or residential purposes. Here Multiple Regression Analysis as a statistical technique is applied to estimate the differences in property values which is due to differences in their environmental quality.

## 9. DATA PRESENTATION AND ANALYSIS

In this chapter, multiple regression analysis is used to study the relationship between environmental quality and property values.

This chapter also covers the testing of hypothesis to find out if the null hypothesis stated earlier is in line with the result obtained after testing.

In order to achieve the information sought by the research, descriptive and inferential analysis were adopted using tables, frequencies and percentages. The hypothesis of the study was analyzed with inferential statistics. The inferential statistics employed is the Chi-square (X<sup>2</sup>) test, at 5% level of significance.

For the purpose of analyzing the relationship between rental and capital values in the study area and important factors that influence it, the study area was divided into two major parts viz;

**Areas affected by oil spillage** and **Areas not affected by oil spillage**. Field survey revealed that Gokana local government was majorly affected by oil spillage caused by a fault in the Trans-Niger pipeline in 2008 while Tai, Eleme and Oyigbo L.G.A's were relatively unaffected. Four towns each were randomly selected from each of the major areas. This is represented in the table below.

**Table 9.1 Major Division of residential/ agricultural Land in Ogoni land**

AREAS AFFECTED BY OIL SPILLAGE	AREAS NOT AFFECTED BY OIL SPILLAGE
BODO	BORI
BARAKO	LUAWII
BIARA	BOWE
GIOKOO	KAA

One important feature of these Towns is that apart from the rural areas, building types in other layouts are basically the same and consist mainly of detached, semi-detached blocks of flats and self contained apartments. The subset of interest is One (1) No 1bedroom flat for residential properties and 1 plot of land measuring 465m<sup>2</sup> which can either be used for agricultural practices or residential purposes. Effort was made to restrict the sampled properties to this class in all the sampled towns.

## 9.1 Multiple Regression Analysis

Multiple regressions as an aid to appraisal in thus a way of estimating how selling prices are related to the important factors that influence it. Once the relationships are determined statistically, they may be used to estimate selling prices for other properties in the population from which the sample was drawn. It will provide a means for estimating how much price or value increases or decreases with given changes in the determinants.

### Multiple Regression Equation

$$= y = a + b_{1x1} + b_{2x2} + b_{3x3} \dots + b_{n \times n} + U$$

Where; y=Value of property  
a = Constant term  
b = Coefficient  
x = Variables  
U = the error term.





GLOBAL JOURNAL OF ADVANCED RESEARCH  
(Scholarly Peer Review Publishing System)

### Data

The model developed in this study is based on a set of about ten 1/No. 1 – bedroom flat 465m<sup>2</sup> plots which can either be used for agricultural practices or residential purposes obtained from both affected and unaffected areas of Ogoni land. Eight samples were used to develop and validate the models. The samples were selected from homogeneous locations in each of the areas to ensure control over location factor. Variables used in the analysis can be seen in the multiple regression analysis used to develop the linear property valuation described below.

$$Y = f(X_1, X_2, X_3, X_4, X_5, X_6, X_7, X_8, X_9, X_{10})$$

Where; y = Property values

- X<sub>1</sub> = Locational quality
- X<sub>2</sub> = Age of buildings
- X<sub>3</sub> = Time of sale/valuation
- X<sub>4</sub> = Annual rent/Property values
- X<sub>5</sub> = Quality of construction material
- X<sub>6</sub> = Quality of functionality of service
- X<sub>7</sub> = Gross building area
- X<sub>8</sub> = Plot size
- X<sub>9</sub> = No of stories/floors
- X<sub>10</sub> = Interest.

## 9.2 Analysis of Variables

This analysis has considered mostly intrinsic qualities of properties as it assumes that all exogenous variables of economy demand and supply have equal influence on all residential property value at any time.

- a) **Locational quality: X<sub>1</sub>**  
Closeness to the Central Business District (CBD) has been identified as one major factor that affects the quality of a layout in Ogoni land. Bori town due to its closeness to Port Harcourt has a positive advantage while Bodo has a negative advantage due to its hazardous location.
- b) **Age of buildings: X<sub>2</sub>**  
Depreciation, obsolescence and quality of construction materials can be expected to affect the market value of a property. In this study, different properties used are not more than ten years old as at the day of valuation.
- c) **Time of sale/valuation: X<sub>3</sub>**  
Ideally, only those sales/valuation within the last 10 years (2006 – 2016) are used in this analysis because of the highly volatile nature of the Nigerian economy.
- d) **Annual rent/Property Values : X<sub>4</sub>**  
Average rent ranges from N12, 000 in 2006 to N120, 000 in 2016. A positive relationship exists between rental and market value.
- e) **Quality of construction material: X<sub>5</sub>**  
All the buildings listed are constructed of sandcrete blocks, with good architectural appeal, modern style and finished in good quality floor and wall decoration, it is expected to have a positive premium.
- f) **Quality of functionality of service: X<sub>6</sub>**  
The value of the property can be expected to vary directly with availability of pipe borne water, electricity, security gates etc. most of these were found present and in good order.
- g) **Gross building area: X<sub>7</sub>**  
Gross building area was found to vary from 230m<sup>2</sup> to 325m<sup>2</sup>. Some measure of area or volume of property would be the most important determinant of market value under the cost approach.
- h) **Plot size: X<sub>8</sub>**  
The basic list of plot sizes ranges from 345m<sup>2</sup> to 465m<sup>2</sup>. When plots increase, land values also increase.
- i) **No of stories/floors: X<sub>9</sub>**  
All the buildings listed are similar and of 1/No. 1 – bedroom flats.
- j) **Interest: X<sub>10</sub>**  
The properties here are of freehold interest, assuming other variables are held constant, the unexpired interest subsisting in property are directly related to market values, the coefficient is positive.

### Trends in Annual Rental Income

Table 1 below shows the annual rental values of 8/No. 1-bedroom flats for residential purposes over the study period from 2006 to 2016. It shows annual rack rental values at various years for each of the 8/No. 1-bedroom.



**Table 1: Rental values of 8/No. 1 – Bedroom Flats Residential Real Estate in Ogoni land Per Annum in ₦ “000”**

S/N	TOWNS	2006	2005	2006	2007	2008	2009	2010	2011	2012	2013	2016
<b>AREAS NOT AFFECTED BY OIL SPILLAGE (POLLUTION)</b>												
1	Bori	20	23	28	35	40	40	50	55	60	73	80
2	Luawii	25	27	30	35	38	45	55	60	70	75	75
3	Bowe	15	17	25	35	40	40	45	55	55	56	58
4	Kaa	22	23	30	33	37	42	47	50	60	67	70
<b>AREAS AFFECTED BY OIL SPILLAGE (POLLUTION)</b>												
5	Bodo	10	20	27	29	30	30	32	35	40	40	45
6	Barako	12	17	20	35	37	40	45	45	47	50	54
7	Biam	12	15	17	25	35	37	37	40	45	47	50
8	Giokoo	13	20	25	27	30	30	33	35	35	40	47

**Source:** Extracts from Estate Surveyor's records.

According to table 1 above, it can be noticed that the trend of annual rental income on properties within areas not affected by oil spillage is higher than that of areas that are affected by oil pollution. Residential properties in Bori command the highest annual rental value. This can be attributed to the fact that Bori is located close to Port-Harcourt city which is the (CBD). Properties in Bodo command the lowest rental value; this can be attributed to the devastating effect of the oil spills which occurred in Bodo in August and December 2008. In 2016 only the rental value in Bodo is seen to be about 43% less when compared to Bori. Other factors such as the accessibility to market, shops, places of work and nearness to social amenities like schools, government offices all influence property values but the significant difference in the rental values between the two different areas under review can be seen to be as a result of difference in environmental quality.

#### **Trends in Capital Values**

Fundamentally, market value of a property is determined by its location, accessibility, availability of social amenities, environment and factors among others. The capital values of a plot of land measuring about 465m<sup>2</sup> which can be used for agricultural practice or residential purposes in different parts of Ogoni land Vary widely.

However, land in places like Bori, Luawii, Bowe and Kaa with the provision of social amenities, good soil fertility level, well drained and in good location could sell for nearly the same price; while plots of land in areas affected by oil spillage have little or no value. The effect of chronic oil pollution renders the land useless or less useful.

Table 2 below shows the estimated capital values of Plots of land measuring about 465m<sup>2</sup> in the different areas of Ogoni land under review.



**Table 2: Estimated Capital Values of A Plot of land measuring about 465m<sup>2</sup> Per Annum in ₦ “000”**

S/N	TOWNS	2006	2005	2006	2007	2008	2009	2010	2011	2012	2013	2016
<b>AREAS NOT AFFECTED BY OIL SPILLAGE (POLLUTION)</b>												
1	Bori	300	350	350	470	470	500	550	630	850	900	970
2	Luawii	250	300	390	450	470	475	490	500	560	590	820
3	Bowe	330	330	345	370	420	550	590	650	700	735	750
4	Kaa	250	300	360	450	530	570	570	650	670	700	770
<b>AREAS AFFECTED BY OIL SPILLAGE (POLLUTION)</b>												
5	Bodo	30	33	35	41	50	55	67	70	100	120	130
6	Barako	35	37	40	43	47	47	50	65	100	110	150
7	Biam	32	35	40	40	53	54	55	55	70	100	110
8	Giokoo	35	37	37	43	47	52	55	57	69	90	130

**Source:** Extracts from Estate Surveyor's records.

### 9.3 Analysis Of Questionnaire

**Table 3: Oil pollution on land affects soil fertility negatively.**

	<b>No of respondents</b>	<b>Percentage s</b>
Strongly agree	56.0	56.0
Agree	42.0	42.0
Undecided	2.0	2.0
Disagree	0.0	0.0
Strongly disagree	0.0	0.0
Total	100	100

Table 3 shows that 56 respondents, representing (56%) of the respondents strongly agree that oil pollution on land affects soil fertility negatively, 42 respondents, representing (42%) of the respondents agree with the assertion, 1 respondent, representing (2%) of the respondents were undecided while none of the respondents neither disagree nor strongly disagreed. This show that a greater percentage of the respondents feel that oil pollution on land affects soil fertility negatively.

Table 4 shows that 30 respondents, representing (30%) of the population strongly agree that oil pollution causes remarkable reduction in the per capital income if farmers and fishermen, 62 (62%) agree to the assertion, 6 (6%) were undecided, 2 (2%) disagree while none strongly disagree. This show that a greater percentage of the respondents agree oil pollution causes remarkable reduction in the per capital income if farmers and fishermen.



**GLOBAL JOURNAL OF ADVANCED RESEARCH**  
(Scholarly Peer Review Publishing System)

**Table 4: Oil pollution causes remarkable reduction in the capital income of farmers and fishermen.**

	<b>No of respondents</b>	<b>Percentages</b>
Strongly agree	30.0	30.0
Agree	62	62.0
Undecided	6	6.0
Disagree	2	2.0
Strongly disagree	0	0
Total	100	100

**Table 5: Oil pollution reduces the productivity of farmers and fishermen negatively.**

	<b>No of respondents</b>	<b>Percentages (%)</b>
Strongly agree	62	62
Agree	36	36
Undecided	2	2
Disagree	00	0
Strongly disagree	0	0
Total	100	100

Table 5 above indicated that 62 respondents, representing (62%) of the population Strongly agree that Oil pollution reduces the productivity of farmers and fishermen, 36 respondents, representing (36%) of the respondents Agree with the assertion, 2 respondents, representing (2%) of the respondents were Undecided whereas none Disagreed nor Strongly disagreed. This shows that a greater percentage of the respondents agree that Oil pollution reduces the productivity of farmers and fishermen negatively.

**Table 6: Oil pollution affects land values negatively**

	<b>No of respondents</b>	<b>Percentages</b>
Strongly agree	35	35.0
Agree	50	50.0
Undecided	10	10.0
Disagree	5	5.0
Strongly disagree	0	0.0
Total	100	100

Table 6 indicates that 35 respondents, representing (35%) of the respondents strongly agreed with the assertion, 50 respondents, representing (50%) of the respondents agreed, 10 respondents, representing (10%) of the respondents were undecided and 5 respondents, representing (5%) of the respondents disagreed while none strongly disagreed. This shows that a greater percentage of the respondents agree that Oil pollution affects land values negatively.

**Table 7: Oil Pollution Leads To a Reduction in Environmental Quality**

	<b>No of respondents</b>	<b>Percentages</b>
Strongly agree	56	56.0
Agree	37	37.0
Undecided	7	7.0
Disagree	0	0.0
Strongly disagree	0	0.0
Total	100	100



Table 7 shows that 56 (56%) of the respondents strongly agree that oil pollution leads to a reduction in environmental quality, 37 respondents, representing (37%) of the respondents agreed, 7 respondents, representing (7%) of the respondents were undecided, 0(0%) disagreed, while none strongly disagreed. This show that a greater percentage of the respondents agree that **Oil pollution leads to a reduction in environmental quality.**

**Table 8: Oil pollution causes health related problems to men and animals.**

	No of respondents	Percentages
Strongly agree	62	62.0
Agree	23	23.0
Undecided	14	14.0
Disagree	1	1.0
Strongly disagree	0	0
Total	100	100

Table 8 reveals that 62 respondents, representing (62%) of the respondents strongly agreed with the assertion, 23 respondents, representing (23%) of the respondents agreed, while 14 respondents, representing (14%) of the respondents are undecided, 1 response disagreed while none strongly disagreed with the assertion. This shows that a greater percentage of the respondents agree that **Oil pollution causes health related problems to men and animals.**

**Table 9: Oil pollution cause desecration of shrines and sacred grounds.**

	No of respondents	Percentages
Strongly agree	20	20.0
Agree	56	56.0
Undecided	16	16.0
Disagree	4	4.0
Strongly disagree	4	4.0
Total	100	100

Table 9 shows that out of the sampled population 20% strongly agreed with the assertion, 56% agreed, 16% were undecided, 4% disagreed while 4% strongly disagreed that oil pollution cause desecration of shrines and sacred grounds.

**Table 10: Oil pollution leads to social unrest and violence.**

	No of respondents	Percentages
Strongly agree	40	40.0
Agree	45	45.0
Undecided	8	8.0
Disagree	7	7.0
Strongly disagree	0.0	0.0
Total	100	100

Table 10 shows that 40% of the sample population strongly agree that oil pollution leads to social unrest and violence, 45% Agreed, 8% were undecided, 7% disagreed while none strongly disagreed. This show that a greater percentage of the respondents agree that **oil pollution leads to social unrest and violence.**

**Table 11: Oil pollution affects aquatic environment and destroy aquatic life**

	No of respondents	Percentages
Strongly agree	32	32.0
Agree	56	56.0
Undecided	8	8.0
Disagree	4	4.0
Strongly disagree	0	0.0
Total	100	100





**GLOBAL JOURNAL OF ADVANCED RESEARCH**  
(Scholarly Peer Review Publishing System)

Table 11 revealed that 32% of the sampled population strongly agreed with the assertion, 56% agreed while none of the respondents is for undecided, disagreed or strongly disagreed. This show that a greater percentage of the respondents agree that **Oil pollution affects aquatic environment and destroy aquatic life**

**Table 12: Oil pollution renders water unfit for drinking.**

	No of respondents	Percentages
Strongly agree	62	62.0
Agree	26	26.0
Undecided	6	6.0
Disagree	6	6.0
Strongly disagree	0	0.0
Total	100	100

Table 12 shows that 62% of the sample strongly agree that **Oil pollution renders water unfit for drinking**, 26% of the sampled population agreed, 6% were undecided, 6% disagreed with the assertion while none strongly disagreed. This show that a greater percentage of the respondents agree that **Oil pollution renders water unfit for drinking**.

**Table 13: Oil pollution may result in rural urban migration.**

	No of respondents	Percentages
Strongly agree	20	20.0
Agree	50	50.0
Undecided	18	18.0
Disagree	10	10.0
Strongly disagree	2	2.0
Total	100	100

The table 13 shows that 20% of the sample population strongly agreed with the assertion, 50% agree, 18% were undecided 10% disagreed while 2% strongly disagreed. This show that a greater percentage of the respondents agree that **Oil pollution may result in rural urban migration**.

**Table 14: Oil pollution can result from equipment failure, corrosion and leakage of oil pipelines.**

	No of respondents	Percentages
Strongly agree	52	52.0
Agree	36	36.0
Undecided	4	4.0
Disagree	8	8.0
Strongly disagree	0	0.0
Total	100	100

Table 14 shows that 52% of the sampled population strongly agreed that **Oil pollution can result from equipment failure, corrosion and leakage of oil pipelines**, 36% of the sampled population agreed, 4% are undecided, 8% disagree and none strongly disagreed.

**Table 15: Oil Pollution Can Be Caused By Sabotage (Oil Bunkering Activities).**

	No of respondents	Percentages
Strongly agree	62	62.0
Agree	30	30.0
Undecided	5	5.0
Disagree	2	2.0
Strongly disagree	0	0.0
Total	100	100



**GLOBAL JOURNAL OF ADVANCED RESEARCH**  
(Scholarly Peer Review Publishing System)

Table 15 above shows that 62% of the sampled population strongly agreed with the assertion, 30% Agreed, 5% are undecided, 2% disagreed and none strongly disagreed. This shows that a greater percentage of the respondents agree that **oil pollution can be caused by sabotage (oil bunkering activities)**.

**Table 16: Oil pollution on agricultural land can boost crop yield**

	<b>No of respondents</b>	<b>Percentages</b>
Strongly agree	0	0.0
Agree	3	3.0
Undecided	0	0.0
Disagree	40	40.0
Strongly disagree	57	57.0
Total	100	100

Table 16 shows that none of the respondents strongly agreed that Oil pollution on agricultural land can boost crop yield, 3% Agreed. 40% disagree and 57% strongly disagreed. This shows that a greater percentage of the respondents disagreed that **Oil pollution on agricultural land can boost crop yield**.

**Table 17: Oil Companies in the Host Oil Community Provide Social Support Services Such as Employment.**

	<b>No of respondents</b>	<b>Percentages</b>
Strongly agree	0	0.0
Agree	2	2.0
Undecided	10	10.0
Disagree	76	76.0
Strongly disagree	12	12.0
Total	100	100

Table 17 shows that none of the respondents strongly agreed with the assertion, 2% agreed, 10% were undecided, 76% disagreed and 12% strongly disagreed. This shows that a greater percentage of the respondents disagreed with the assertion that **Oil companies in the host oil community provide social support services such as employment**.

**Table 18: Oil Companies Have Done Enough to Prevent Future Re-occurrence of Oil Spillage in Host Communities.**

	<b>No of respondents</b>	<b>Percentages</b>
Strongly agree	3	3.0
Agree	10	10.0
Undecided	21	21.0
Disagree	46	46.0
Strongly disagree	20	20.0
Total	100	100

Table 18 shows that from the sampled population 3% strongly agreed with the assertion, 10% agreed, 21% were undecided, 46% disagreed and 20% strongly disagreed. This shows that a greater percentage of the respondents disagreed with the assertion that **Oil companies have done enough to prevent future re-occurrence of oil spillage in host communities**.

**Table 19: Government Has Played Its Role in Tackling Oil Bunkery.**

	<b>No of respondents</b>	<b>Percentages</b>
Strongly agree	16	16.0
Agree	14	14.0
Undecided	31	31.0
Disagree	33	33.0
Strongly disagree	6	6.0
Total	100	100



**GLOBAL JOURNAL OF ADVANCED RESEARCH**  
(Scholarly Peer Review Publishing System)

Table 19 above indicate that from the sampled population 16% strongly agreed with the assertion, 14% agreed, 31% were undecided, 33% disagreed and 6% strongly disagreed.

**Table 4.4.19: Government policies and regulations on agricultural land development are adequate.**

	No of respondents	Percentages
Strongly agree	10	10.0
Agree	16	16.0
Undecided	10	10.0
Disagree	43	43.0
Strongly disagree	21	21.0
Total	100	100

Source: field Survey 2015

Table 4.4.19 above show that, 10% of the sampled population strongly agreed with the assertion, 16% of the sample population agreed with the assertion, 10% was undecided, 43% disagreed and 21% strongly disagreed. This show that a greater percentage of the respondents disagreed with the assertion that Government policies and regulations on agricultural land development are adequate.

**Table 4.4.20: Government policies and regulations on residential land development are adequate.**

	No of respondents	Percentages
Strongly agree	11	11.0
Agree	43	43.0
Undecided	13	13.0
Disagree	15	15.0
Strongly disagree	18	18.0
Total	100	100

From Table 4.20 above, it can be seen that 11% of sampled population strongly agreed that **Government policies and regulations on residential land development are adequate**, 43% agreed, 13% were undecided, 15%, disagreed and 18% strongly disagreed. This show that a greater percentage of the respondents agreed with the assertion.

## 9.4 Hypothesis testing

**H0:** there is no significant effect of oil pollution on Agricultural and residential land values.

**H1:** there is significant effect oil pollution on Agricultural and residential land values.

Chi Square

$$X^2 = \frac{\sum OF - EF}{\sum F}$$

Where

$\sum$  = summation sign

OF = observes frequencies

EF = Expected frequencies



**GLOBAL JOURNAL OF ADVANCED RESEARCH**  
(Scholarly Peer Review Publishing System)

	Oil pollution on land affects soil fertility	Oil pollution reduces the productivity of framers and fishermen	Oil pollution causes remarkable reduction in the capital income of framers and fishermen.	Oil pollution can subject land owners to acute starvation and poverty	Oil pollution leads to a reduction in environmental quality	Oil pollution causes health related problems to man and animals	Total
SA	56 (50)	30 (50)	62 (50)	35 (50)	56 (50)	62 (50)	301
A	42 (42)	62 (42)	36 (42)	50 (42)	37 (42)	23 (42)	250
U	2 (2)	6 (7)	2 (7)	10 (7)	7 (7)	14 (7)	41
D	0 (0)	2 (1)	0 (1)	5 (1)	0 (1)	1 (1)	8
SD	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	04 (0)	0
<b>Total</b>	100	100	100	100	100	100	600

$$ESA = \frac{301 \times 100}{600} = 50.1$$

$$EA = \frac{250 \times 100}{600} = 41.6$$

$$ED = \frac{0 \times 100}{600} = 0$$

$$EU = \frac{41 \times 100}{600} = 0.8$$

$$EFD = \frac{8 \times 100}{600} = 1.33$$

$$\begin{aligned}
 &+ \frac{(2-1)^2}{1} + \frac{(0-0)^2}{0} + \frac{(62-50)^2}{50} \\
 &+ \frac{(36-42)^2}{42} + \frac{(2-7)^2}{7} + \frac{(0-1)^2}{1} \\
 &+ \frac{(0-0)^2}{0} + \frac{(35-50)^2}{50} + \frac{(50-42)^2}{42} \\
 &+ \frac{(10-7)^2}{7} + \frac{(5-1)^2}{1} + \frac{(0-0)^2}{0}
 \end{aligned}$$

$$\begin{aligned}
 &+ \frac{(56-50)^2}{50} + \frac{(37-42)^2}{42} + \frac{(7-7)^2}{7} \\
 &+ \frac{(0-1)^2}{1} + \frac{(0-0)^2}{0} + \frac{(62-50)^2}{50} \\
 &+ \frac{(23-42)^2}{42} + \frac{(14-7)^2}{7} + \frac{(1-1)^2}{1} \\
 &+ \frac{(0-0)^2}{0}
 \end{aligned}$$

$$0.72+0+3.57+1+0+8+95^2+0.14+1+0+2.88+0.86+3.57+1+0+ 4.5 + 1.52 + 1.29 + 16 + 0 +0.72+0.60 +0+1 + 0 + 2.88 + 8.60 + 7+ 0 + 0 = 76.37$$

$$X^2 \text{ Cal} = 76.37$$

$$\text{Let } \alpha = 0.05$$

$$\text{Degree of freedom} = (r-1) \text{ where}$$

$$r = \text{number of rows}$$

$$C = \text{numbers of columns}$$

$$\text{From my table, } r=5 \text{ and } c=6$$

$$DF = (r-1)(c-1) = (5-1)(6-1) = 4 \times 5 = 20$$

$$X^2_{0.05}(20) = 31.41$$

$$\text{Thus, } X^2_{\text{tab}} \text{ i.e the critical values} = 31.41.$$



**GLOBAL JOURNAL OF ADVANCED RESEARCH**  
(Scholarly Peer Review Publishing System)

#### Decision rule

Accept  $H_0$  if  $\chi^2_{cal} \leq \chi^2_{tab}$

Reject  $H_0$  if  $\chi^2_{cal} \geq \chi^2_{tab}$

Therefore at 5% level of significance is significant effect of oil pollution on Agricultural and residential land values.

## 10. SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATIONS

### 10.1 Summary of Findings

- Oil pollution decreased soil fertility in Ogoni land.
- Oil pollution led to the reduction of the productivity of farmers and fishermen.
- Oil pollution lead to a reduction in the environmental quality in Ogoni land.
- Oil pollution causes health related problems for the inhabitants of Ogoni land.
- Drinking water is also badly affected by oil spillage.
- The major areas affected by oil spillage in Ogoni land is Bodo community in Gokana Local Government Area. The People of Ogoni land do not feel that they have been adequately compensated.
- Rental values in places affected by oil spillage were found to be between 30%-43% below the rack rental value. While plots of land in areas affected by oil spillage have little or no value.
- The effects of chronic oil pollution render agricultural land useless or less useful depending on the degree of affection by spillage.
- The utmost disregard for safety and economic disaster posed by the activities of oil companies has left host communities in Ogoni land in situation of utmost misery and consequently a series of upheavals, agitations and social unrest.
- Not much has been done by the government to ameliorate the effect of oil spillage in Ogoni land.

### 10.2 Conclusion

oil pollution in Nigeria and in host communities in particular has had a devastating effect on the social and economic life of her inhabitants.

The research stressed the need for preventive measures rather than control measures. The importance of a cordial relationship between the host communities, oil companies and the government can not be over emphasized. This will help in halting further occurrences of oil pollution in the study area and all the oil producing areas within the Niger Delta region.

Adequately compensating affected victims both cash and kind so as to put them back to their former position.

### 10.3 Recommendation

The following recommendations spring up from the findings of the study:

- ❖ Most of the pipelines being used by almost all the exploration and production (oil) companies were laid more than thirty years age and over use are catching up with most of them. In order to prevent massive spillages and leakages, it become very important that arrangements should be made for necessary replacement and major repair work carried out on the old pipelines. With this continuous land and environment degradation which has increased in the last few years will therefore abate.
- ❖ That oil companies should finance and sponsor joint ventures with the farmers and fishermen in their areas of operation. This will assist the farmers and fishermen sustain their livelihood in case of any impact on their means of survival.
- ❖ The need for incorporation of injurious affection and disturbance when valuing for compensation due to oil pollution should be pin-pointed by practicing Estate Surveyors and Valuers rather than basing their valuation on economic crops and trees.
- ❖ The government in collaboration with the oil companies should establish a resources bank in which money, equipment and relief materials should be paid in or stored for effective rehabilitation efforts as they arise.
- ❖ On the part of the host communities, it becomes imperative that they organize vigilante activities to prevent vandalism of pipelines and other oil installations that pass through their areas. This will help to curtail the number of spillages caused by sabotage and pipeline vandalism.
- ❖ A close liaison should be maintained by oil companies with appropriate Government and industrial organizations and with host communities as this will enable them provide resources and contingency plans drawn up to respond to spills.
- ❖ That oil companies should embark on a right of way surveillance of oil pipelines passing through host communities. This will lead to early detection of spillages and urgent attention given before its impact becomes great.
- ❖ Oil companies should employ more indigenes from host communities as a way of contributing to the improvement of their standard of living.
- ❖ Youth and women empowerment programmes should be initiated and carried out by both the government and oil companies carrying out oil exploration activities in host communities so as to actively and profitably engage the idle youths and women as a way of encouraging hard work, peace also reducing youth restiveness.





**GLOBAL JOURNAL OF ADVANCED RESEARCH**  
(Scholarly Peer Review Publishing System)

## 11. REFERENCES

- [1] NDRDMP, Niger Delta Regional Development Master-plan, (2010). Facilitated by the Niger Delta Development Commission (NDDC) in partnership with the nine states' governments, LGAs, Oil Companies, Civil Society Organizations and Communities in the Niger Delta.
- [2] SPDC, (1996): People and the Environment. SPDC Annual Report.
- [3] SPDC, Shell Petroleum Development Company, People and the Environment. Annual Report. 1995. The Guardian Newspaper, Oil 50 years on. 2006; Tuesday June 13 p16
- [4] Abiodun, O. (2013) *Factors that make property values increase*. Online publication. The punch news paper August 27, 2013
- [5] Aluko, J. U. (2001) "Assessment of damages caused by oil pipelines spill at Oyakama village in the Ahoada Local government area of the River State of Nigeria" Unpublished Assessment Report.
- [6] May, A.A. (1968), *Valuation of residential real estate*. Prentice Hall, Inc., New Jersey.
- [7] Ifediora, G.S.A. (1993), *Appraisal framework*. Iwuba Ifediora and Associates, Enugu.
- [8] Baum, A. and Crosby, N. (1991): *Property investment appraisal*, Routledge, London.
- [9] Ogbuefi, J. U (2009), *Aspects of feasibility and viability studies*. University of Nigeria. Enugu campus Enugu. Nigeria.
- [10] Uchegbu S.N. (1998): *Environmental Management and Protection*, Precision Printers & Publisher, Enugu, Nigeria.
- [11] FEPA (1992) *Transition to sustainable development in Nigeria: Report for the United Nation Conference on Environment and Development*. Academy press Plc.
- [12] Nwilo, C.P. and Badejo, T.O (2005a) Impacts and Management of Oil Spill Pollution along the Nigerian Coastal Areas. Department of Survey & Geoinformatics, University of Lagos, Lagos, Nigeria. [www.fig.net/pub/figpub36/chapters/chapter\\_8.pdf](http://www.fig.net/pub/figpub36/chapters/chapter_8.pdf)
- [13] Nwilo, C.P. and Badejo, T.O (2005b) Oil Spill Problems and Management in the Niger Delta. International Oil Spill Conference, Miami, Florida, USA.
- [14] Nwilo, P.C. & O.T. Badejo, (2005): Oil Spill Problems and Management in the Niger Delta. International Oil Spill Conference, Miami, Florida, USA.
- [15] Vobnu S. K (2001). *Origin and languages of Ogoni land people*. Outreach Publishers. Port Harcourt. pp 3-4.



**GLOBAL JOURNAL OF ADVANCED RESEARCH**  
(Scholarly Peer Review Publishing System)

## APPENDIX

**A questionnaire on Real Asset Devaluation: The Harmful Effects Of Oil Spillage On Agricultural And Residential Property Values.**

### INSTRUCTION

The questionnaire is prepared in two different sections 1 and 2 in section one, are requested to indicate your response.

SA = strongly Agree      A = Agree      U = Undecided      D =disagree      SD = strongly disagree

### BIO DATA

1. (i) Name of respondents \_\_\_\_\_  
(ii) Name of town/Village \_\_\_\_\_  
(iii) L.G.A \_\_\_\_\_
2. Age - (i) (20-25) [ ]    ii.. (25-35) [ ]    (iii) (35-50) [ ]    iv. And above 50 [ ]
3. Sex - i. Male [ ]    ii. Female [ ]
4. Marital status: (i) Single [ ]    (ii) Married [ ]    (iii) Widow [ ]    (iv) Separated [ ]
5. Level of Education  
(i) No formal education [ ]    (ii) FSLC [ ]    (iii) WASSCE/GCE [ ]    (iv) B.Sc [ ]  
(v) Ph.D [ ]    Others specify.....
6. Occupation: (i) Student [ ]    (ii) Farmer [ ]    (iii) Fishermen [ ]    (iv) Traders [ ]  
(v) Oral Servants [ ]    Specify others.....

S/N	ITEMS	SA	A	U	D	SD
1	Oil pollution on land decrease soil fertility					
2	Oil pollution causes remarkable education in the capital income of farmers and fishermen.					
3	Oil pollution reduces the productivity of farmers and fishermen.					
4	Oil pollution leads to loss in land values.					
5	Oil pollution leads to a reduction in environmental quality.					
6	Oil pollution causes health related problems to men and animals.					
7	Oil pollution cause description shrines and sacred grounds.					
8	Oil pollution lead to social unrest and violence.					
9	oil pollution affects aquatic environment and destroy aquatic life					
10	Oil pollution renders water unfit for drinking.					
11	Oil pollution may result in rural urban migration.					
12	Oil pollution is as a result of equipment failure, corrosion and leakage of oil pipelines.					
13	Oil pollution can also be caused by sabotage (oil bunkering activities).					
14	Adequate compensation is paid to cushion the effects of oil spillage.					
15	Oil companies in the host oil community has done enough to provide social support services such as employment.					
16	The effect of oil pollution on land in the host communities at long term (25 years and above).					
17	Oil companies have done enough to prevent future re-occurrence of oil spillage in host communities.					
18	Government has done enough to tackle oil bunkery.					
19	Government policies and regulations on agricultural land development are adequate.					
20	Government policies and regulations on residential land development are adequate.					