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A FRAMEWORK FOR DETERMINING THE COMPENSABLE VALUE OF DAMAGES DUE TO CONTAMINATION TO WETLANDS IN THE NIGER DELTA OF NIGERIA

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ACKNOWLEDGEMENTS

DECLARATION

I certify that the substance of this thesis has not already been submitted for any degree and is not currently being submitted for any other degree. I also certify that to the best of my knowledge any assistance received in preparing this thesis and all the sources used have been duly acknowledge and referenced in this thesis.

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DEDICATION

This dissertation is dedicated with utmost affection to:

My beloved wife Ijeoma and my children namely Victor, Ibalaunwo, Chiasaleme, and Chichenimeuma

My late parents Mr Alfred Ezekwesiri Akujuru and Mrs. Salome Nwanda Akujuru

who gave me the foundation to thirst for excellence in education and my late sister

Mrs. Zilpah Abidi

who ensured I had education.

May their gentle souls rest in perfect peace until the Parousia. Amen!

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LIST OF ABBREVIATIONS AND ACRONYMS

AI   Appraisal Institute

ANIVS   Associate of the Nigerian Institution of Estate Surveyors and Valuers

ANZL   Australia and New Zealand Property Institute

AVM   Automated Valuation Models

BoDs   Biological Oxygen Demands

Cap   Chapter of Law

CERCLA   Comprehensive Response, Compensation and Liability Act

CND   A mixture of carbon nanodiscs and nanocones

CSR   Corporate Social Responsibility

CUSPAP   Canadian Uniform Standard of Appraisal Practice

DCF   Discounted Cash Flow

DoE   Department of Environment

DPR   Department of Petroleum Resources

EGASPIN   Environmental Guidelines and Standards for the Petroleum Industry in Nigeria

ESVARBON Estate Surveyors and Valuers Registration Board of Nigeria

FAO   Food and Agricultural Organisation

HND   Higher National Diploma

IAAO   International Association of Assessing Officers

IOC   International Oil Company

IVS   International Valuation Standard

IVSC   International Valuation Standards Council

LFN   Law of the Federation of Nigeria

LNG   Liquefied Natural Gas

LUA   Land Use Act

MA   Millennium Ecosystem Assessment

MNC   Multinational Company

MRICS   Member of the Royal Institution of Chartered Surveyors

NBTE   National Board for Technical Education

NDES   Niger Delta Environmental Survey

NDRDMP   Niger Delta Regional Development Master Plan

NIESV   Nigerian Institution of Estate Surveyors and Valuers

NNPC   Nigerian National Petroleum Corporation

NOSDRA   National Oil Spill Detection and Response Agency

NTFP   Non Timber Forest Products

NUC   National Universities Commission

OECD   Organisation for Economic Corporation and Development

OP   Operational Manual

OPTS   Oil Producers Trade Section of the Lagos Chamber of Commerce and Industry

PPE   Professional Practice Examination

PQE   Professional Qualifying Examinations

RCEP   Royal Commission on Environmental Pollution

REC   Recorganised Environmental Condition

RESP   Respondent to Expert Interviews

RICS   the Royal Institution of Chartered Surveyors

RII   Relative Importance Index

SARA   Superfund Amendment and Reauthorisation Act

TIAVSC   The International Assets Valuation Standards Committee

TPC   Test of Professional Competence

UK   United Kingdom of Great Britain and Northern Ireland

UNEP   United Nations Environment Programme

US   United States of America

USPAP   Uniform Standard of Appraisal Practice

WBSCD   World Business Council for Sustainable Development

Abstract

The valuation of any property follows a process which if followed results in a reasonably consistent determination of value. While the valuation of properties usually traded in the market is reasonably rampant and within the everyday pre-occupation of the professional valuer, the valuation of contaminated land occurs occasionally and poses serious challenges to the valuer in the absence of any framework. The issue of contamination by oil pollution has been very rampant in the Niger Delta wetlands of Nigeria and valuers called upon to assess damages resulting therefrom have had to adopt valuation processes prescribed for marketable real properties and neglecting to value the ecosystem goods and services that exist in the wetlands, due to the absence of any framework for such valuations. The valuation methods used in valuing properties compulsorily acquired by Government being adopted in valuing contaminated properties including wetlands is contrasted with that used for assessing the compensable value of damages due to contamination and the existing valuation framework examined to confirm its applicability to valuing contaminated wetlands. This research aims to develop a framework for the assessment of the compensable value of damages due to contamination to wetlands by oil pollution in the Niger Delta wetlands.

The research adopts an interpretivist philosophy, an abductive logic with a mixed method approach and a case study strategy to examine the valuation practice when faced with the challenge of valuing an oil contaminated wetland in the Niger Delta. The case study strategy afforded the opportunity to apply several data collection techniques and analysis. It is argued the behaviour of valuers is a subjective phenomenon that should be interpretatively studied to understand valuers' behaviour. Literature and documents were deductively analysed while a questionnaire survey was conducted among the valuation firms and triangulated with data from semi-structured expert interviews of some purposively selected firms.

The thesis suggests the definition of value of contaminated wetlands should be a special and not a market value, as the assumption of willing sellers and buyers does not apply in contamination situations. It is suggested that the physical composition of wetlands be recognised and an appropriate framework incorporating both the upland and wetlands components be adopted for its valuations. Finding that valuers anchor their practice and frequently adopt the pre-determined compensation method of valuation to assess the value of contaminated wetlands, it concludes that the resultant paltry compensation is partly responsible for the Niger Delta conflicts and does not comply with international best-

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practices, and also engenders discontent among the stakeholders of a contaminated wetland valuation. The thesis contends that this practice originates from the inadequate valuation curricular and absence of a Standard of Practice, and recommends the inclusion of wetland economics in a revised valuation curricular. This thesis concludes by proposing a framework that will aid valuers to be consistent in assessing the compensable value of damages due to contamination.

CHAPTER 1.   INTRODUCTION

1.1. Introduction

Since each valuation assignment is unique and requires a special skill from the valuer charged with the responsibility to undertake the assignment, there has arisen the need to develop a framework for assessing damages due to contamination by oil pollution which occurs frequently in the Niger Delta. This is justified by the inability of the traditional valuation techniques to accommodate the consequences of environmental contamination which McLean David and Bill (1998) stated that this is due to the contracted market for properties that have been exposed to contamination, limited awareness or knowledge of the extent of contamination among prospective buyers and the uneven spread of knowledge about such factors, throughout the population. Expert valuers practicing in the Niger Delta have used property-based valuation models in tackling any valuation problem, though pollution usually affect not just real property but goods and services that dominate a wetland like the Niger Delta. This research intends to propose the adoption of valuation models that incorporate both property-based and wetland-based valuation techniques in assessing damages.

This introductory section presents the background, aim, objectives, research questions and probable contribution to knowledge.

1.2. Structure of the Report

The determination of the compensable value of the damages due to contamination of wetlands requires a methodical consideration of the various components of the protocol leading to value determination. This suggests a sequence of events that will achieve the objectives of the study; hence the thesis is divided broadly into two halves. The first halve is a general introduction to the research process after introducing the case study area, while the second halve discusses the various objectives accordingly as follows:

Chapter One introduces the subject of valuation of contaminated wetlands and the need for the study. A general overview of the scope of the study is stated while discussing the rational for the study.

Chapter Two describes the case study region, stressing the fact that the Niger Delta region is an integral part of the Nigerian nation and affected by both the national economic and development agendas. The geography and economic environment of the region is discussed and the peculiar development challenges presented.

Chapter Three assumes that since the subject of the study is contaminated wetlands the chapter should and does describe what constitutes a wetland, land and other laws affecting land rights in the Niger Delta region. The various methods of valuation and the principles of valuation/appraisal in different parts of the world where oil pollution has caused contamination to land is discussed, so also are the principles of valuing environmental goods/services. As valuation is a problem that requires to be solved, the literature on problem solving and stakeholder analysis is reviewed. The general valuation process id described and a conceptual framework is proposed.

Chapter Four describes the strategy adopted in choosing the research methods and links the selected methods to the desired outcomes. This research adopts constructivist ontology, an interpretivist epistemology and a case study methodology to study the research problem. The collection of data was done by means of a concurrent mixed method using both quantitative and qualitative approaches. This was done because the research studies the behaviour of valuers /appraisers in the Niger Delta and as Gallimore (1996) confirms there is a growing recognition of the contribution to be made by an understanding of people's actual, rather than theorised, behaviour in the performance of professional tasks like valuation/appraisal. The preliminary findings from the reviewed literature are stated.

Chapter Five describes the valuation methods used by valuers/appraisers in the region and drawing from field data, illustrates which valuation methods are dominantly used and tries to adduce reasons for such methods. A distinction is made between valuation for compulsory acquisition and valuation to determine the compensable value which equates the damages that should be paid to persons affected by contamination.

Chapter Six discusses the land rights subsisting in the Niger Delta and the various stakeholders to land in the region. It introduces and discusses the key professionals involved in valuation practice and how they conduct a valuation study, and uses field data to determine the key considerations in valuation and the initiators and key influencers of the valuation process. Using field data as well, the study discusses who is

most satisfied by the current valuation practice, adducing reasons for such satisfactory feeling.

Chapter Seven describes the proposed framework for the determining the compensable value and stresses the fact that while incorporating the problem solving process into the protocol, it must be realised that the valuer must wait to receive the scientific findings of the likely impact of the contamination from the scientific experts whose opinions will guide the valuer in reflecting the full impacts of the contamination on the wetland value, in measuring the income loss resulting therefrom.

Chapter Eight concludes the thesis with a summary which highlights the areas where a contribution to existing knowledge has been made. It discusses the particular research and highlights the identified areas of further research and lessons learnt from this study.

1.3. Background to the Research

Contamination of natural resources occurs when natural or developmental projects results in some form of disaster to the environment. Such disasters may be land subsidence, flooding, and environmental pollution. Environmental degradation results in the payment of damages to those whose properties have been affected by those who cause the damage, where they can identified and they accept liability for the damage whether voluntarily or legally induced. Compensation in the Niger Delta of Nigeria, has been related to Compensation payments for compulsory acquisition of land for oil and gas development (Ogedengbe, 2007b, Akpan, 2006, Nuhu, 2008, Kakulu, 2008). All the authors affirm that the methodology for the valuation for compulsory acquisition in Nigeria is stipulated by the Land Use Act (LUA) 1978 (now Cap. L5, LFN. 2004)(Nigeria, 2004). Kakulu (2008)even asserts that the LUA provisions which require assessments of compensation for oil and gas acquisitions to be based on the provisions of the Minerals and Mining Act (2007) or Petroleum Act now Cap. P10 LFN (2004) is un-necessary as the later Act still refers to the methods provided for in the LUA, though there is no justification for this view as this study contends that the intent of the LUA is not to over-ride the provisions of the Petroleum Act but to ensure that oil operations on land continue unhindered and the Petroleum Act covers a wider scope than the LUA which concentrates on land acquisition only. The mistaken belief that compensation for damages due to contamination and the compensation for compulsory acquisition can similarly be treated, is based on the definition of 'public purpose' to include the

requirement of land for oil/gas operations in the statutes. Most environmental degradation in the Niger Delta results from economic activities of the oil and gas companies as they prospect for oil and gas, produce them and transport them through the numerous pipelines that criss-cross the landscape of the Niger delta. These degradations have become rampant and subject of so many publications (NWLR, 1995, Nwilo and Badejo, 2007, Akpan, 2005, Akpan, 2006, Snow and Thomas, 1994). The damages have resulted from oil spills which have devastated most of the oil producing communities. Damages have been defined "as the pecuniary compensation which the law awards to a person for the injury he has sustained by reason of the act or default of another, whether that act or default is a breach of contract or a tort;" (Hailsbury Laws of England: 3rd Ed. Vol. II at 216). Legally, "damages are the recompense given by process of law to a person for the wrong that another has done him."

Payment for environmental damage or degradation, no matter how it occurs, has been taken for granted to be a corollary of the compensation for compulsory acquisition, as the degraded land is usually assessed with the same methodology that is adopted for compulsory acquisition. In most compensation assessments for compulsory acquisition, a fixed price regime is assumed and the trees and economic crops are valued with compensation rates issued by the Oil Producers Trade Section (OPTS) of the Lagos Chamber of Commerce and Industry (Kakulu, 2008). The OPTS rates are guided by the rates the State uses in acquiring land for 'public interest' projects, but they are slightly improved to make them higher than the State rates (Akpan, 2005). Most authors agree that the resulting compensation is grossly inadequate but do not recommend any method that will generate an adequate compensation. Akpan (2005) contended that the inadequate compensation arises from the division of crops into economic/cash crops and consumption/food crops with the former attracting higher values, but totally neglecting goods of high cultural significance and intergenerational value. The World Bank (1995) states that low compensation rates for damage caused by oil and other activities should account for the present value of the loss of economic trees and crops and also reflect their impact on the ecosystem services. The authors contend that a root cause of the restiveness in the Niger Delta stems from the inadequacy of compensation paid when any damage occurs to the environment. Professional valuers advising the oil/gas companies or representing the land owners have relied on the valuation methodology stated in the LUA (Ogedemge 2007, Nuhu 2008, Kakulu 2008). Clearly, there is the

need to devise a new strategy to be adopted in assessing the value of any degraded land, since the damage paid is usually equated to the value of the subject land. Marshall (1996) stated that valuation is required for different purposes but the normal list of purposes taught to valuers, rarely includes valuation of degraded or contaminated properties but when required to, valuers have normally relied on market value models to determine the value of degraded properties. Kinnard (1998), stated that the literature on the valuation of contaminated properties in the United States of America, United Kingdom and New Zealand date from 1994 with particular methods recommended in the UK in 1997(Kennedy, 1997). The experience and practice of the US and UK authors is generally dominated by commercial properties in urban neighbourhoods. The Niger Delta is basically a rural area and requires a special consideration in the application of known valuation methods. As Kakulu (2008) stated, local practices and methods are suited to their local reality though they may not be suitable for the International community (as land policies differ). Cotula (2008)stated, that compensation for damage arises after a wrongful act has occurred and differs from the compulsory acquisition process where the compensation is part of the process. Thus it is a legal remedy in the case of damage, linked to human rights. The International Labour Organisation (ILO) Convention 169 requires "fair compensation for damages", article 15(2) and compensation for "any loss or injury" article 16(5). The European Court of Human Rights in Lopez Ostra v Spain and the African Commission on Human and Peoples' Rights in SERAC v Nigeria confirmed that environmental pollution may constitute a violation of human rights. Akpan (2007a) stressed that the entire Niger Delta region is a study in social environmental degradation largely on account of petroleum production, hence this study will focus on the contamination resulting from oil pollution as against other causes. Oil spills in the Niger Delta have been a regular occurrence and the resultant contamination of the surrounding environment, has caused significant tension between the people and the international companies operating there.

Oil pollution affects water bodies and agricultural land when it occurs. While fishery habitat is destroyed, crops in the ground rarely survive. The effect of any oil pollution usually lasts for a long time. The present approach to valuing contaminated landed where acquisition methods are applied, hardly addresses the long term impacts on soil fertility and agricultural productivity. It is in the bid to explore how the impact of contamination is on the valuation methodology, that this study is being undertaken.

Valuation is the quantification of an understanding of the various factors influencing value like the market, legal impact, physical constraints, planning regime, availability of finance, the demand for the product and the general economic influences affecting value. It is thus the process of determining or estimating the price of exchange in the market place. In this study, what is important is the market value of contaminated resource. The International Valuation Standards Council (IVSC, 2007) p.27, defines market value as:'

the estimated amount for which an asset should exchange on the date of valuation between a willing buyer and a willing seller in an arm's length transaction after proper marketing, wherein the parties had each acted knowledgeably, prudently and without compulsion.'

While this definition may not hold sway when pollution occurs, it provides the minimum basis with which to assess damages resulting there from. French (2007) states that a fundamental valuation model should reflect the role of property as an asset to the owner/business where market data is unavailable as is the case with most polluted environments. It needs be stated that what is sought in the valuation of any polluted site, is the quantification of damages suffered from the pollution and not compensation for loss. Figures 1.1 and 1.2 shows a typical Niger Delta environment with oil pipelines crossing near a residential neighbourhood and the stages of contamination emanating from a rupture of one of the oil pipelines.

Figure 1.1: Typical Niger Delta Community Environment

Source: Adapted from Watts (2012)
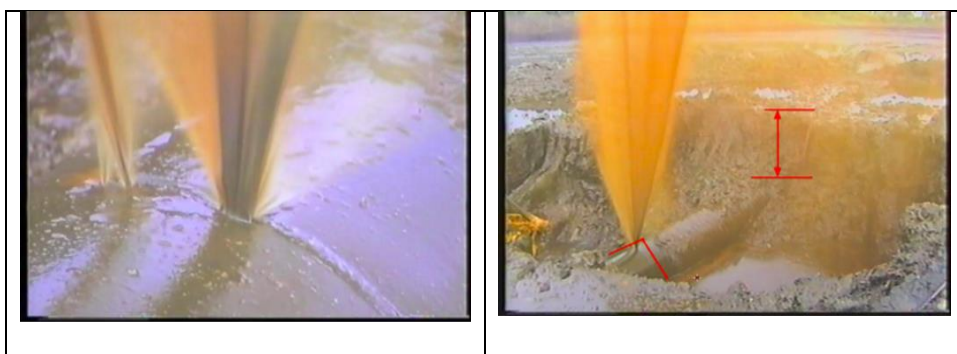
Figure 1.2: Ruptured Pipeline Spewing Crude Oil

Source: Steiner (2011)

Figure 1.3: Mangrove Contamination

Source: Steiner (2011)

This research intends to examine the valuation process used to assess damages to land due to contamination, when they occur in the Niger Delta and propose a framework that will aid the process.

1.4. Research Aim:

To develop a Framework for the determination of the compensable value of damages due to contamination to Wetlands in the Niger Delta, Nigeria.

1.5. Objectives:

•   To ascertain from literature, the valuation of oil polluted land with natural resources, and the determination of the value of damages arising from pollution.

•   To explore the valuation methods suitable for determining the value of damages on land with natural resources.

•   To identify the stakeholders of contaminated wetlands and the methods adopted for valuing oil polluted natural resources and the factors usually considered in the process.

•   To propose a framework for valuing contaminated wetlands in the Niger Delta region of Nigeria.

•   To validate the proposed framework for determining the compensable value of damages due to contamination of wetlands in the Niger Delta region of Nigeria.

1.6. Research Questions:

Based on the background issues raised, the following research questions were raised:

I.   What constitutes contaminated land in the Niger Delta of Nigeria and what are the basis and determinants of damages paid for contamination?

II.   What are the conventional methods of valuation used in assessing damages due to contamination of wetlands?

III.   Who are the Stakeholders of contaminated wetlands in the Niger Delta and how do they influence the determination of damages process?

IV.   What alternative valuation framework can be proposed for determining the compensable value of damages on contaminated wetlands in a deltaic region like the Niger Delta?

V.   How does the proposed framework improve the damage assessment process, the determination of compensable value, and the practice of valuation generally?

1.7. Contribution to Knowledge:

It is expected that this study will provide practising valuers, with a framework to adopt when determining the compensable value of damages to be paid as a result of any contaminating incident that impacts on land in the Niger Delta. It will provide a snap shot of the various processes to be followed in determining the compensable value of contaminated wetlands, and provide policy makers a yardstick for measuring the professionalism of valuers engaged in damage assessment projects and will enable students, researchers, practitioners and educators of conventional property valuation to learn from the techniques of environmental valuation. The proposed framework will aid land occupiers in negotiating appropriate compensation for damages suffered.

1.8. Research Rationale:

Every valuation presents a different problem (John Garmony of the Australian Institute of Valuers ant Land Economists cited by Kummerow (1997). This uniqueness of valuation/appraisal assignments was reinforced by Whipple (1995) when he stated that "each assignment is a special-purpose one-special to the particular problem, prevailing market condition, the availability of data, the skill of an appraiser, and a host of other factors". These views emphasise the problem faced by valuers when valuing contaminated land to determine damages due to contamination in the Niger Delta of Nigeria.

The region's economy is donated by the operations of the oil and gas sectors which are mostly operated by the International Oil Companies (IOCs). In the process of exploring and producing the oil and gas which provides the bulk of the nation's revenue, the Niger Delta environment is constantly contaminated by oil pollution which necessitates the request for an assessment of the damages suffered as a result. The assessment is undertaken by valuers who are the only legally authorised professionals to place value of any kind on any property in Nigeria. In undertaking the valuation, each contaminated land poses a special problem that requires a special consideration in proffering a solution. In a typical rural contaminated land might exist both dry agricultural land and some wetlands with various species of crops and trees. The adjoining forests may be the habitat of different species of animals and birds and the wetlands may be useful for

harvesting different types of fish and goods. These peculiar features differentiate such land from normal residential or industrial building lands in the urban area, which are frequently traded in the market. In most rural communities, land sales are rare and when there is need to value in such communities, there is hardly any market data available for comparison. Since the market is the only true test of value, it becomes very difficult to find data that may be used in such valuations. It is argued that the best way to know market prices is through market transactions and that since markets reveal prices through recent transactions for similar properties, the preferred way of knowing using any of the tradition approaches to value is inference from transactions.

Since property types differ so also do the valuation problems attending each type of property differ. Kummerow (1997) contends that the valuer needs to step into the shoes of space users to determine how well the property works for a particular use to be able to value it. In valuing a property, the valuer defines the value being sought. The definition of value will depend on the purpose of the valuation as an investor will seek a value reflecting his risk and return requirements, a compulsory acquisition valuation will require a statutorily defined value while a contamination valuation will require the valuer to estimate the value with and without the effect of the contamination to be able to determine any loss in value. This will call for a different definition of value from the usual market value definition frequently used by valuers. Kummerow (1997) argued that this stepping into the shoes of a potential buyer/user can lead to errors in identifying or choosing potential buyers/users, leading to mistakes in valuation methods applied as some value-adding use known to buyers/users may not be apparent to a valuer or a valuer may notice some positive or negative feature that the eventual buyer may not consider.

The Niger Delta is a wetland and according to Lambert (2003), wetlands as defined by the Ramsar Convention, cover a wide variety of habitat types, including rivers and lakes, coastal lagoons, mangroves, peat lands, and even coral reefs. In addition, there are human-made wetlands such as fish and shrimp ponds, farm ponds, irrigated agricultural land, salt pans, reservoirs, gravel pits, sewage farms, and canals. Wetlands are among the world's most productive environments. They are cradles of biological diversity, providing the water and primary productivity upon which countless species of plants and animals depend for survival. They support high concentrations of birds, mammals, reptiles, amphibians, fish and invertebrate species. Of the 20,000 species of

fish in the world, more than 40% live in fresh water. Wetlands are also important storehouses of plant genetic material and rice, for example, which is a common wetland plant, is the staple diet of more than half of humanity. He states that the interactions of physical, biological and chemical components of a wetland, such as soils, water, plants and animals, enable the wetland to perform many vital functions, like water storage; storm protection and flood mitigation; shoreline stabilization and erosion control; groundwater recharge (the movement of water from the wetland down into the underground aquifer); groundwater discharge (the movement of water upward to become surface water in a wetland); water purification through retention of nutrients, sediments, and pollutants; and stabilization of local climate conditions, particularly rainfall and temperature. Also that wetlands provide tremendous economic benefits, for example: water supply (quantity and quality); fisheries (over two thirds of the world's fish harvest is linked to the health of coastal and inland wetland areas); agriculture, through the maintenance of water tables and nutrient retention in floodplains; timber production; energy resources, such as peat and plant matter; wildlife resources; transport; and recreation and tourism opportunities. While translating these values into economic terms is of high importance to any society where they occur, the valuation of wetlands has been the pre-occupation of Ecologists and Environmental Economists rather than Real Estate Valuers.

Expert valuers practicing in the Niger Delta have been trained in normative valuation models originating from the domain of Finance and have used the property-based valuation methods in tackling any valuation problem they tackle. DeLisle (1985) stated that appraisal (valuation) theory has stagnated and that the absence of a unified body of appraisal thought has widened the array of techniques and treatments from among which appraisers must choose and has helped professionals in other fields to intercept business from appraisers. He further contends that the absence of a fully integrated model exposes the industry to a range of external pressures in the form of legislative and judicial intervention in the appraisal process.

Many scholars have studied normative aspects of the appraisal process but there has arisen a trend in behavioural research into the decision-making processes of property experts, though as Black et al. (2003a) stated, almost all behavioural investigation into the problem solving of property experts has been focused on valuers and the research can be broken down into departures from normative models, comparable sale selection,

valuation biases and client feedback. Not much research has been done on the appropriateness of the normative models to particular valuation problems. This research aims to contribute to filling this gap.

Generally, the traditional valuation techniques are limited in their assessment of damages due to contamination, especially when valuing real property subject to environmental contamination such that is prevalent in the Niger Delta. McLean David and Bill (1998) advanced certain reasons for this limitation to include: 1) there is often a contracted market for residential properties that have been exposed to short- or long-term contamination, including limited recent or even long- term sales history; 2) there is limited awareness or knowledge among prospective buyers of the extent of the contamination, its risks and current status; and 3) knowledge about such factors can spread unevenly throughout the population, influenced by many factors, and changes in property values reflecting contamination may occur unevenly over time.

Valuers have restricted their search for appropriate valuation methods to the normative property based methods avoiding any contribution from environmental or ecological economics. Since most of the goods and services derived from the Niger Delta are outside the definition of real property but constitute a component of the income of the property owners, it is reasonable to examine methods being used to value such goods and services with a view to adopting any that may complement the output of the property based methods in the assessment of damages due to contamination. The proposed framework will draw appropriate methods of valuation form wetland based and property based methods to determine any diminution in real property value that occurs as a result of contamination. Such diminution in value will constitute the compensation that should be paid to those who suffer damages as a result of any contamination. This research is therefore necessary to formulate a valuation framework that will be used in assessing damages to land due to contamination, especially in the Niger Delta wetlands. It is justified by the frequent pollution incidents which attend the oil exploration and production process and the incessant conflicts resulting from inadequate compensation paid to land owners in the wake of a contamination occurrence. There is also the need for such a study to enhance the professional competence of practicing valuers and valuation students in the region to bring them in line with current international best practices.

1.9. Identification of Gap

Since professional valuers in Nigeria are the only professionals authorised by law to determine value of property (whether real or personal), of any definition, it follows that when a contamination occurs, they are usually consulted to determine the compensable value which usually equates to the damages suffered due to contamination. To date, valuers have relied on the property based methods of valuation that they have been trained especially, the valuation methods adopted for compulsory acquisition cases, and neglecting to borrow more robust valuation methods used by environmental or ecological economists. Given this situation, there appears to be no composite valuation framework that could be adopted by valuers trying to determine the compensable value of a contaminated wetland, which will equate to the damages due to contamination of the wetland. This study thus aims to fill this methodological gap that exists in valuation practice in the Niger Delta for the determination of the compensable value due to contamination of wetlands.

1.10. Scope of the Research

This study has explored the valuation methods usually adopted by Valuers practicing in the Niger Delta region, in valuing real properties of any description, and some methods used for valuing marketable environmental goods/services. Only the professional valuers practicing in the Niger Delta and the Niger Delta region constitute the scope of this study.

Only professional valuers were studied among the various stakeholders of a valuation problem and contaminated wetlands. It was also assumed that there will exist a free market for valuers to practice, without the Nigerian government being directly involved in dictating what compensation should be paid for any wetland contamination and will not indirectly determine a ceiling payment through its control of the International Oil Companies operating in the region.

CHAPTER 2.   NIGERIA AND THE NIGER DELTA REGION

2.1.   Introduction

This chapter introduces the Nigerian nation from the Niger Delta region where the sample data was collected situates. After a brief introduction of the geography and the economy of the Nigerian nation, the Niger Delta region is described starting from its geography, economy, and development potentials. The chapter stresses the fact that the economic potentials of the region opens it up for exploitation and development, but the poor administrative structure of the nation and the complicity of the major IOCs, have resulted in the feeling of marginalisation and alienation by indigenes of the region thus laying the foundation for the political crises that has rocked the Niger delta and given it the image of a restive region of the world.

2.2. Background Information on Nigeria

Nigeria as a Country is reported as having a population of about 173.615 million people as at 2014 (World Bank, 2014). This makes it the most populous nation south of the Sahara with an area of 923,768 square kilometres with annual growth rate range of between 2.8 and 3.2 percent between states. The Country lies between Longitude 3^0East and 15^0East and Latitude 4^0North and 140^0 North. It is bordered in the north by the Republics of Niger and Tchad; in the West with the Republic of Benin, in the south-east by the Republic of Cameroun and in the south by the Atlantic Ocean which forms a coastline of about 800km. It measures about 1200km from east to west at its widest point and about 1050km from north to south. It has a topography ranging from the Niger Valley lowlands along the coast, to high plateaus in the north and mountains along the eastern border.

By 2013, the gross domestic product (GDP) was $448.1 billion, indicating a per capita income of $2,720. The re-basing of its GDP from 1990-2010, resulted in an 89% increase in the estimated size of the economy which now surpasses the GDP of South Africa (Barungi, 2014) and the GDP increased to $510 billion (BusinessDay, 2014).

The Nigerian economy has recorded an average growth of 7.4% per annum in the last decade, which is higher than the West African sub-regional level and also higher than the sub-Saharan Africa level (Barungi, 2014). Inflation has averaged about 12.2% in the last five years (World Bank, 2014). While the economy has grown generally, development in terms of the United Nation's Millennium Development Goals in the areas of eradicating poverty and hunger; achieving universal primary education; promoting gender equality and empowering women; reducing child mortality; improving maternal health; combatting HIV/AIDS, malaria and other diseases; ensuring environmental sustainability; and Global Partnership for Development, have been very slow with Nigeria ranking only 153 out of 186 Countries in the United Nation's Human Development Index (World Bank, 2014). Table 2.1 provides a summary of Nigeria's economic indicators.

Table 2.1: Nigeria's Economic Indicators

Region	Sub-Saharan Africa
Income Category	Lower Middle Income
Population	173.6 Million
Gross National Income (GNI) Per Capita US$	$2,720.

Source: World Bank (2014)

The vegetation which describes assemblages of plants is a combination of rain forests in the south and grass savannah in the north. The rain forest consists of Saline water swamp, Freshwater swamp, and Tropical evergreen rainforest; while the savannah grasslands consist of the Guinea Savannah, Sudan Savannah, and the Sahel Savannah. The rain forest vegetation supports timber production and forest development and the production of cassava, fruit trees like citrus, oil palm, raffia palm, oranges, cocoa, and rubber among others. The savannah vegetation is mostly suitable for grain production, supporting grains like grasses, tubers, groundnuts, cotton and vegetables.

It is politically subdivided into 36 States including the Federal Capital Territory and 774 Local Government Areas. Its government is a three- tier structure, with a Federal Government, The States and the Local Government Areas, with its administrative Capital at Abuja. Figure 2.1 shows the Country with the various States and the Federal Capital Territory of Abuja.

Figure 2.1: Geographical Map of Nigeria

Source: http://www.nigeriamasterweb.com/5mbebe/NigeriaStatesMap.gif

2.3. Economy of Nigeria

Nigeria's economy is dominated by the oil and gas industries which contribute about 95% of the nation's export earnings and 40% of the gross domestic product (GDP) at current prices (World Bank, 2013), with the major industrial complexes being the Refineries and Petro-Chemicals at Kaduna, Warri, Port Harcourt, and Eleme. Nigeria ranks in the top ten oil producers in the world and is the highest producer in Africa. Other industries include Iron and Steel at Ajaokuta, Warri, Oshogbo, Katsina and Jos, Fertilizer af Onne- Port Harcout, Kaduna, Minna and Kano, Liquified Natural Gas at Bonny and an Aluminium Smelting Company at Ikot Abasi. Its major commercial/ industrial cities include Lagos, Onitsha, Kano, Ibadan, Port Harcourt, Aba, Maidugiri, Jos, Kaduna, Warri, Benin and Nnewi. Nigeria's oil and gas reserves are concentrated in the Niger Delta region where the major international operators operate.

To situate this study requires a brief history of crude oil exploration in Nigeria. Oil was first discovered in Nigeria in 1956 at Oloibiri in the Niger Delta after half a century of exploration by Shell-BP as sole concessionaire. Commercial production began in 1958 and after 1960, exploration rights in onshore and offshore areas adjoining the Niger Delta, were granted to all the foreign companies. Nigeria joined the Organisation of Petroleum Exporting Countries (OPEC) in 1971 and set up a state owned oil company called the Nigerian National Petroleum Company (NNPC) in 1997. Oil production in

Nigeria today, is dominated by the joint venture (JV) companies who collectively control about 95% of Nigeria's crude oil production leaving the balance to indigenous companies operating some marginal oil fields. These JV companies according to Odularu (2008), include Shell Petroleum Development Company with 55% Government Interest; Exxon Mobil, Chevron Texaco, ENI/Agip, and Totalfina Elf with 60% Government Interest. The Government Interests are held by the Government Oil Company called NNPC.

2.4. Nigerian Real Estate Market

The major real estate investments in Nigeria are in offices, retail, industrial, and residential real estate. The major cities are Lagos (commercial capital), Abuja (Federal Capital), Port Harcourt, and Kano. These cities have in recent times experienced a high level of urbanisation like other African Countries and according to UN-HABITAT data, the proportion of Africans living in urban areas grew from 32% in 1990 to 40% in 2010 and might rise to 47% in 2025. Knight Frank (2013) stated that there are few international investors investing in the Nigerian real estate market due to its undeveloped nature, and that there is evidence that there is increased demand from some South African funds seeking exposure to markets in sub-Saharan Africa.

Generally there is a short supply of good quality office space meeting the specification of international companies in Nigerian cities, with very few providing spaces of more than 1000 square metres. The office real estate market is most active in Lagos where prime office rents are as high as US$85 per square metre per month. Also the availability of good quality space is gradually improving with a lot of top-grade construction in progress. It is expected that the Eko Atlantic scheme will create a new commercial district south of the current CBD. Port Harcourt and Abuja have less choice office real estate and do not experience the high rents of Lagos. (Knight Frank, 2013) stated that office real estate in Abuja let for US$65 per square metre per month and yield a return of 10% per annum. It is hoped that new schemes like the Abuja World Trade Centre and the Greater Port Harcourt City, will create new commercial neighbourhoods that will meet pent up demand and provide high quality of spaces.

Retail real estate in Nigeria's major cities appears to be transiting from traditional markets into western-style retail and leisure malls (Knight Frank, 2013). Some notable

developments are the South African giant Shoprite in Ikeja City Mall, Lagos, and Palms Mall at Lekki. In Abuja there are mostly medium-sized malls, though Shoprite Supermarket has since 2012 opened at the new Grand Towers. Port Harcourt is the least developed with modern retail properties, though Spar Supermarket has since early 2014 opened near the CBD. Knight Frank (2013) stated that Lagos retail rents are about US$65 per square metre per month, indicating a yield of 11% per annum while Abuja retail real estate also fetch US$65 per square metre per month and yield a return of 13% per annum.

Industrial real estate has been increasing outside Lagos State, with many multinational companies creating secondary manufacturing hubs in the south east. Poor power supply has been the bane of manufacturing in Nigeria, leading to some manufacturers relocating from the country and discouraging new investments. The few that exist, in Lagos let for about US$12 per square metre per month and yield 13% return per annum and Abuja industrial rents are about US$9.50 per square metre per month and yield a return of 13% per annum (Knight Frank, 2013).

Residential real estate developments have been dominated by the luxury residential sector since the oil boom, and there appears to be an over-supply now (Knight Frank, 2013). Rents for residential units in Lagos are very high averaging about US$10,000 per month and yield a return of 9% per annum for a 4 Bedroom executive house. Port Harcourt and Abuja residential markets are buoyant and have been experiencing steady growth. Abuja rents average about US$10,000 per month, indicating a yield of 8% per annum for a 4 Bedroom executive house (Knight Frank, 2013).

The impact of the real estate sector on the Nigerian economy can be seen in Table 2.2 which summarises the sectorial impact of the different sectors of the Nigerian economy since the rebasing of the GDP in April, 2014.

Table 2.2: Sectorial Impact on Nigeria's GDP

S/No	SECTOR	VALUE (Billion)	PERCENTAGE (%)
1.	Real Estate	40.9	8
2.	Manufacturing	34.5	6.8
3.	Agriculture	112.26	22
4.	Crude Oil Production and Natural Gas	73.56	14
5.	Telecommunications and Information Services	44.3	8.7
6.	Others	204.48	40.9
	TOTAL	510	100

Source: Nigerian BusinessDay (2014)

The dominant position of the oil sector in the Nigerian economy and the pre-eminent position of the Niger Delta region as the main location of the oil industry highlight the importance of this study concerned with the consequences of contamination occasioned by oil spillage on the Niger Delta environment and which is now discussed below in section 2.5.

2.5. The Niger Delta

2.5.1. Geographic Location

The Niger Delta with an estimated area of about 70,000km^2 is one of the World's largest deltas. It is located in the Central part of Southern Nigeria between above latitude $5^o33^'49^"$N and $6^o31'38"$E in the North. Its Western boundary is given as Benin $5^o44^'11^"$N and $5^o03'49^"$E and its Eastern boundary is Imo River $4^o27'16"$N and $7^o35'27"$E. Figure 2.2 below shows the map of the Niger Delta.
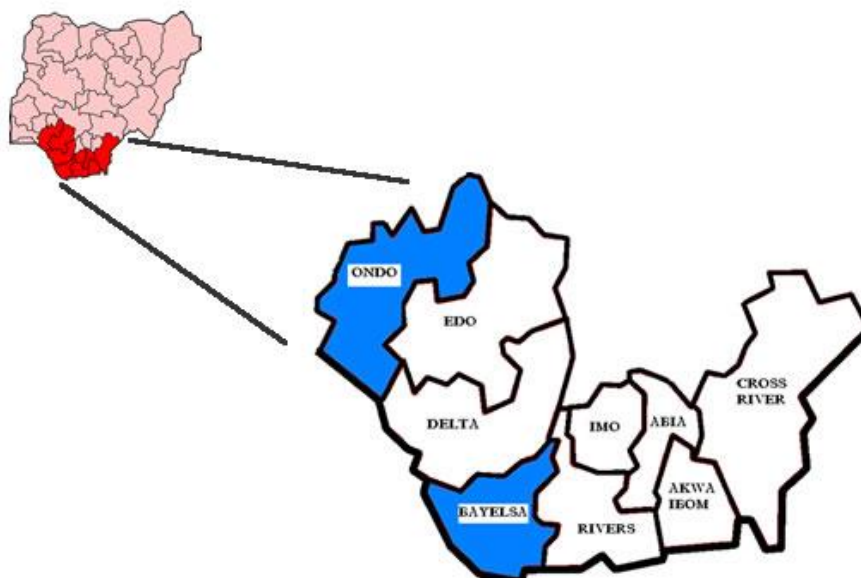
Figure 2.2: Map of the Political Niger Delta

Source: UNDP, 2009

The Niger Delta is located along the Atlantic coast which forms the southern boundary of Nigeria, and it is the entrance of Rivers Niger and Benue into the ocean through a web of rivers, creeks, and estuaries. It is the largest wetland in Africa and the third largest in the world, with about 2370 square kilometres of rivers, creeks and estuaries. Its vegetation is predominantly of the forest type with 8600 square kilometres of swamp forest and about 1900 square kilometres of mangrove forests (Alagoa, 2005). The region situated in the southern part of Nigeria, is bordered in the east by the Republic of Cameroun and in the south, by the Atlantic Ocean. Within Nigeria, the region is defined both geographically and politically. The later, being for revenue sharing purposes. The geographic Niger Delta includes the littoral States of Rivers, Bayelsa, Delta Cross River and Akwa Ibom and has an area of about 67,284 square kilometres with a combined population of 16,331,000 persons. The political Niger Delta includes these and in addition, Abia, Edo, Imo, and Ondo states, with a total area of 112,110 square kilometres of land as at 2006. The region represents about 12% of Nigeria's total surface area (NDDC, 2006).

The region has a lot of gas reserves which when sufficiently harnessed, could yield income far in excess of crude oil incomes. There are about 606 oil fields in the Niger Delta, of which 360 are on-shore and 246 are offshore (Nwilo and Badejo, 2005). Most of the new oil fields are deep water fields developed and being developed offshore. Figure 2.2 shows the States now known as the Niger Delta (the Political Niger Delta

States) while Table 2.1 shows the respective states and their land areas and populations and Table 2.2 shows the Geographical Niger Delta States.

2.5.2. Population

The region is dominated by the Ijaw ethnic group. Other groups in the Western Delta include; the Isoko, Itsekiri, Kwale and Urhobo. In the eastern delta are groups like the Ekpeye, Andoni, Ikwerre, Ndoni and the Ogoni. The populations of the major states are as shown in Table 2.1.

Table 2.3: The Political Niger Delta

State	Capital	Land Area	Population
Abia	Umuahia	4,877	3,230,000
Akwa Ibom	Uyo	6806	3,343,000
Bayelsa	Yenagoa	11,007	1,710,000
Cross River	Calabar	21,930	2,736,000
Delta	Asaba	17,163	3,594,000
Edo	Benin	19,698	3,018,000
Imo	Owerri	5,165	3,342,000
Ondo	Akure	15,086	3,025,000
Rivers	Port Harcourt	10,378	4,858,000
TOTAL		112,110	28,856,000

Source: GTZ population projection based on 1991 census & NDRDMP Demography & Baseline sectors study; Agriculture and Rural development sector study Projection based on 1991 census & NDRMP

Table 2.4: The Geographical Niger Delta Statistics

State	Capital	Land Area	Population
Akwa Ibom	Uyo	6806	3,343,000
Bayelsa	Yenagoa	11,007	1,710,000
Cross River	Calabar	21,930	2,736,000
Delta	Asaba	17,163	3,594,000
Rivers	Port Harcourt	10,378	4,858,000

Source: Extracted from Table 2.1

The Niger Delta region with its natural endowments of oil and gas which drives the international economy is poverty ridden as a result of political marginalization, economic pauperization and environmental degradation occasioned by its small soil and oil company activities in the region and long years of reflect by the Federal Government of Nigeria. (Akpan, 2007).

2.5.3. Settlement Pattern:

Being a deltaic region, its settlement pattern is largely determined by the availability of dry land and the nature of the terrain. There is the absence of large settlements in the region, as a result of the low relief and poor ground drainage. The few large settlements occur in Delta States hinterland which has better drainage conditions and accessibility. (*NDRMP 2006,p.53). The mangrove swamp* zone has cities like Port Harcourt, Sapele, Ugheli, and Warri located at the head of the navigable limits of the coastal rivers and estuaries. There are a total of 13,329 settlements, 94% of which has a population of less than 5000 persons and 1% of which are urban. The urban settlements include Port Harcourt, Warri, Asaba, Benin, Akure, Calabar, Uyo, Umuahia, Aba, Owerri, and Yenagoa. Most settlements are small and scattered hamlets, majority of which are rural in nature. Most of these settlements lack essential amenities like medical facilities, portable water, power supply and good transportation systems. The few large settlements are usually separated by their outer rotational farmlands, oil palm or rubber plantation bush or stretches of secondary forest. (NDRMP, 2006, p.53*).*

2.5.4. Economic Activity:

Predominant Occupation: The traditional economic activities of the communities can be categorised as:-

Land based type on the drier parts of the northern end of the Delta, which includes farming, fishing, collecting and processing of palm fruits and hunting; and

Water based type of economy at the Southern parts of the Delta, including fishing, gathering of sea foods, and trading, with a less diversified economy. The crises of environmental degradation may be traced to the following factors:

- Rapid population growth
- Oil exploration
- Expansion of imports

- Consumption of a range of goods and services
- Growing levels of industrial and manufacturing activities
- Inefficient use of farmland through bush fallowing
- Other forms of uncontrolled exploitation of nature's resources.

So far, there are no clearly formulated policies in Nigeria aimed at coordinating and monitoring the relationship between environment and economic development but there are a number of scattered and working articulated programmes and analysed, reveal the directions as well as limitations of environmental and natural resources management strategies in Nigeria

The region is endowed with both renewable and non-renewable natural resources. The major non-renewable resources include fossil fuels, crude oil and natural gas and construction materials such as gravel, sand, clay and earth. Sand is obtained from both land and river beds.

Renewable resources include water resources, timber, pole wood, fuel wood, edible vegetables, fruits, nuts and seeds; medicinal plants, palm wine and other palm products; fibres and tannin, bamboo and grasses, wildlife and a rich aquatic life yielding abundant resources of shell and fin fish and crustaceans. There is an interface between environment and development which is of global concern. The exploitation of resources or raw materials for use in economic activities, agro-processing and industrial activities impact negatively on the environment of the Niger Delta.

2.5.5. Indigenous Food Resources

Farming practices involve principally, the traditional peasant subsistence/crop farming method, land and labour being the principal inputs of production. (Okuneye, 1985). It is characterized by very small farm sizes of less than one hectare per household in most cases. Major food resources of the region include

- Roots and tuners like cassava, yams, cocoyam, and sweet potatoes.
- Cereal groups like maize, rice
- Legumes such as cowpeas, melon, groundnut
- Fruits including plantain, bananas, citrus, pineapples, mango, guava, cashew, paw-paw, local pear.
- Vegetables like pumpkin, bitter leaf.

- Edible oils like palm oil and groundnut oil.
- Flesh food types such as goats, sheep, rabbits, pigs, poultry, cows or sea foods like fish, shrimps, crayfish and molluscs such as periwinkles, oysters and crabs etc.
- Wildlife obtained through hunting and trapping of grass cutters, antelopes, snails and bush pigs.

Crop products over the years show a steady decline as the environment experienced serious pollution due to contamination by crude oil.

2.5.6. Fisheries and Forestry Production

The Niger Delta ecosystems crucial for fish production include;

Inshore waters, brackish waters, mangroves, freshwater swamps, floodplains and rivers. Common species are divided into coastal marine, brackish stocks and freshwater stocks

Forestry resources include timber and non-timber resources. Timber resources include saw logs transmission poles, building poles, bamboo, fuel-wood, and chewing stick. Non timber resources include; oil palm, raffia palm, various fruits like bursh mango (ogbono), spices, various roots, tree barks, leaves, climbers and giant snails.

2.5.7. Industries

Major industrial activities include Palm Oil processing; Gin Distillers; mining, Sand, Gravel and clay. The Petroleum Industry, producing crude oil and gas. Petroleum activities include drilling, well testing, Pipelines, construction dredging, marine transport, air and land transport and chemical equipment supplies. Crude oil and gas production generate the bulk of Nigeria's export earnings producing about 90% of export earnings. Table 2.3 shows the oil industry data at a glance, culminating in the industry's impact on the environment, since the subject of this study relates to the environmental impact of the oil industry.

Table 2.5: Nigeria's Oil Industry at a Glance

Major International Operators	**Shell (Shell Petroleum Development Company, Nigeria, Ltd); Chevron (Chevron Nigeria, Ltd.); ExxonMobil (Mobil Producing Unlimited); Eni (Nigerian Agip Oil Company); Total (Elf) (Total E&P Nigeria Limited, formerly EPNL)**
Main Terminals/Offshore Platforms	**Bonny Island (Shell), Brass River (Eni/Agip), Escravos (Chevron), Forcados (Shell), Kwa Iboe platform (Mobil), Odudu platform (Total), Pennington (Chevron), etc**
Oil Reserves	**36 billion barrels—11th in the world, 2nd in Africa; estimated reserve life of 41 years**
Natural Gas Reserves	**187 trillion cubic feet—7th largest gas reserves in the world**
Oil/Gas Pipelines	**Over 7,000 km of pipelines; 606 oil fields**
Gas Plants/LNG	**30; NLNG Plant with 6 trains; 2 LNG plants in construction in Brass and Olokola**
Environmental Contamination	**1958–2010: est. 546 million gallons spilled; av. 300 spills or nearly 10.8 million/year** **1986—2003: 50,000 acres of mangrove forest disappeared** **Q1 2010: 32% of associated gas flared (127 bcf)**

Source: Francis *et al* (2011)

2.5.8. Environmental Problems

The World Bank (1995) categorized the Niger Delta environmental problems into three major classes viz:

- Land resource degradation
- Renewable resource degradation
- Environmental pollution

In determining these categories, the World Bank experts considered factors like current environmental significance, current health significance, potential intervention benefits and potential intervention costs. See table 2.6.

Table 2.6: Niger Delta Degradation Problems

PROBLEM TYPE	PROBLEM	DIRECT CAUSES	INDIRECT CAUSES	SOURCE
Land Resource Degradation	Erosion Coastal	Sediment Loss Infrastructure Construction	Upstream Loss Population pressure Weak Enforcement Natural and Human induced Subsidence Sea Level Rise	Dam
	River Bank	Heavy Rainfall, Unsustainable Farming, Sediment Loss	Upstream Loss Population pressure Weak Enforcement Natural and Human induced Subsidence Sea Level Rise	Dam
	Flooding	Heavy Rainfall, Agricultural Expansion, Reduced Upstream Water Retention	Upstream Dams Population pressure Natural and Human induced Subsidence Sea Level Rise	Dam

	Sea Level Rise	Climate Change	International Air Emissions	
	Agricultural Land Degradation	Unsuitable Farming Decreased Sedimentation Excessive Flooding Increased Erosion	Population Pressure Upstream Dams	
Renewable Resource Degradation	a) Fisheries -Stock depletion	Fishing Techniques, Fishing Intensity, Post-Harvest Losses	Population pressure Weak Enforcement Open access(limited) Post-Harvest Losses	
	-Habitat degradation	Trawling. Pollution, Oil Activities Nutrient Loss	Weak Enforcement Open access Upstream Dams	
	b) Forestry -deforestation degradation	Agricultural expansion Infrastructure expansion Indiscriminate Logging	Population pressure Weak Enforcement Infrastructure expansion Open access(limited) Incomplete Markets	

	-Biodiversity Loss	Hunting	Population pressure	
		Habitat Loss	Weak Enforcement	
	-Exotic Species	Introduction	Infrastructure expansion	
	Expansion	Forest degradation	Open access(limited)	
		Water hyacinth, Nypa Palm	Incomplete Markets	
			Weak Enforcement	
			Open access	
Environmental Resource Degradation	Water Contamination -Oil	Inadequate waste water management, Spills and Leaks Inadequate waste management	Weak Enforcement Incomplete Markets Weak Enforcement, Open access, Incomplete Markets, Subsidies	
		Inadequate waste Management	Weak Enforcement	
	-Industrial	Inadequate urban Infrastructure	Open access, Incomplete markets	
	-Toxic and hazardous Substances	Inadequate Sewage Treatment	Population pressure Weak Enforcement Open access, Incomplete Markets	

	-Other			
	Air Pollution -Gas Flaring, Industrial, Vehicular Solid Wastes	Industrial Pollution Vehicular Emissions	Weak Enforcement Open access, Incomplete Markets, Subsidies	
	- Industrial	Inadequate waste management	Population pressure	
	-Municipal	Inadequate urban Infrastructure	Weak Enforcement Open access, Incomplete markets	

Source: World Bank (1995)

2.6. Oil Spill on the Niger Delta Environment

Since large scale operations in the oil industry began in 1958, the Niger Delta region had been steadily experiencing cases of environmental degradation. One of the first observable cases of environmental impact of the oil industry in the Niger Delta is related to oil spillage. Delt and IGBEN (2012) stated that increasing petroleum exploitation activities like seismic surveys, land acquisitions, drilling, transportation, storage, waste dumping and associated oil spillages have increased the degradation of the physical environment and resulted in the deprivation and destruction of economic livelihoods of the Niger Delta region. It is recorded that the first large-scale oil blow out occurred in October 1959 and rendered over 2000 people homeless. The first oil spill occurred in 1970 with over 150 barrels spilling on both land and water. Akpan (2006:18) records that between 1970 and 1983, about 1,581 cases of oil spill involving 1,711,355 barrels occurred on both offshore and onshore. Between 1976 and 1996, 4647 oil spills were recorded to have spilled approximately 2,369,470 barrels of oil into the environment. Nwilo and Badejo (2005) state that out of the quantity spilled, 77% were lost to the environment while 23.17% was recovered. By 1998, 5,724 cases involving 2,571,118 barrels were released into the environment (Udoh et al., 2008). The National Oil Spill Detection and Response Agency (NOSDRA) reports that approximately 2,400 oil spills had been reported between 2006 and 2010. A New York Times (2012) report states that about 260,000 barrels of oil have been spilled each year for the past 50 years.

Nwankwo and Ifeadi (1988) argued that damages to the environment include the following:-

- Oil film, on water surfaces prevents natural aeration and leads to death of trapped marine organisms below the surface.
- Oil contaminates food materials which now become harmful to man, plants and animals.
- Oil on land could lead to retardation of vegetation growth for a period. It could also lead to fire out break with disastrous consequences to the environment.

The United Nations Environment Program (UNEP, 2011) report on Ogoniland, confirmed that for over 50 years, there has been wide spread oil contamination

across land and water resources in the Niger Delta from oil production and that it could take 25 to 30 years to return to normalcy.

Figure 2.3 below shows a weld failure along an oil pipeline, spewing crude oil into the surrounding environment, while Figure 2.4 below shows crude oil soiled inter-tidal mud flat, both at Bodo Community in the Rivers State within the Niger Delta. Figure 2.6 below shows the impact of the spilled crude oil on the surrounding mangrove vegetation and this contrast with Figure 2.5 below which shows a mangrove forest in its unpolluted state. These occurrences at Bodo, is a regular site in the Niger Delta.
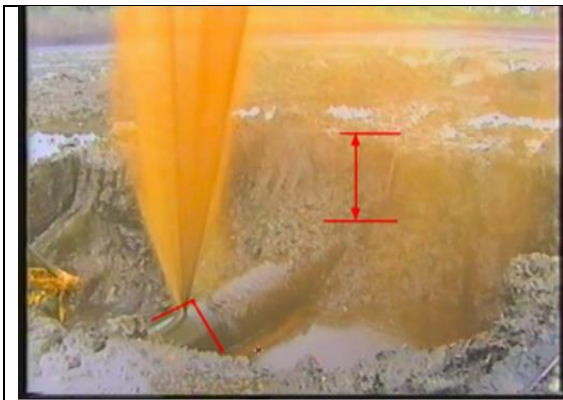
Figure 2.3: Weld Failure along an Oil Pipeline at Bodo Community

Source: Steiner (2011)

Figure 2.4: Crude Oil Soiled Inter-Tidal Mud Flat

Source: Steiner (2011)

Figure 2.5: Uncontaminated Mangrove Forest

Source: Reinaldo Aguilar (2008)

Figure 2.6: Contaminated Mangrove Forest

Source: Steiner (2011)

The oil spillages occur both at oil locations and along pipelines. There are about a dozen networks of pipelines that convey crude to the export and domestic refineries and fuel depots across the country. The pipelines run from 49.89km (31miles) to 616.379 km (383 miles), through mostly rural or swampy areas of land. Most of the pipelines are owned by the major International Oil Companies (IOCs) and the Nigerian National Petroleum Corporation (NNPC).

2.6.1. Gas Flares Pollution

Incidents of gas flaring have occurred continuously since the beginning of exploitation of oil   in the Niger Delta, mostly due to the absence of the infrastructure to produce and market associated natural gas. Gas flares cause health problems resulting from excessive heating of the soil and vegetation. It also results in acid rain and soil degradation and drove away wild life from the region, as this threatens the traditional means of livelihood like hunting and farming. The continuous flaring of associated gas while exploiting oil has made Nigeria contribute immensely to global warming and depletion of the ozone layer. As the global warming worsens, it also compounds the already very bad problems of desertification in the Northern part of Nigeria.

2.6.2. Implications for Oil/Gas Bearing Communities

The implication of the combined effect of oil spills and gas flaring for oil/gas bearing communities differs from one locality to another, depending on:

- The number of Local Government Areas/Communities actually producing oil/gas.
- The length of time the area has been involved in oil/gas activities.
- The exact location or terrain of the oil and gas activities in the state or Local Government Area whether it is on shore or off shore or both.
- The extent to which the community hosts other administrative or social infrastructures provided and managed by oil/gas companies.

2.6.3. Related Activities that Impact the Environment

- During Economic Survey, the environment is impacted in the process of track cutting and transacting, seismic shooting with dynamites, the transportation of personnel and equipment as well as in camp-site erection.

- At the drilling stage, there is access route construction involving the destruction of vegetation, digging of burrow pits, compaction of subsurface and the disposal of drilling wastes as well as heavy equipment and staff movements.

- Others are the construction of camp-sites and support facilities, rig movement, storage of drilling chemicals and spare-parts as well as logging.

- At the Production/Processing stage, the construction of the pipeline right of way (ROW) involving clearing, preparation, laying of pipes and construction of flow stations, preliminary processing activities is undertaken the separation of oil, gas and water is done at flow stations, the produced water is disposed, the gas is flared or re-injected, site oil storage for refineries, gas is piped to user industries and camp site built for personnel.

- At the Transportation Stage, storage and consumption stages, the environment is impacted by tanker/barges off-loading and transfers, construction of tank farms and transportation of oil and gas.

2.6.4. Economic Costs of Economic Activities:

The above impacts result in economic costs like:

1. Loss of Vegetation and forest Resources
2. Loss of Arable Land and Resources
3. Increase in Land and Water Transportation with attendant consequences like aggravation of store erosion, disturbances between life and fishing activities.
4. Improper disposal of dredge spoils along water ways, channels causing blockades to bush paths and waterways used for access to farmlands, fishing parts and timber logging areas.
5. Oil Pollution which pollutes drinking water sources destroys fisheries and farms and generally destroys the ecosystem.
6. Gas Flaring generates acid rain which lends to the corrosion and damaging of roofs of most houses and the disappearance of some plant and crop species.

2.6.5. Environmental Pollution and Oil production

Oil production operations result in environmental pollution arising from

i. Drill cuttings, drilling mud and production fluids;

ii. Produced fluids like oil and water and chemicals injected into drilling holes to control corrosion or aid separation of oil from water;

iii.   General industrial waste.

Oil spills result from equipment failure and human error. Oil spills occurred through accidental discharges due to equipment failure e.g. malfunctioning; age, over loading corrosion or abrasion of parts, some spills are due to sabotage either to steal crude oil or as a protest against the Federal Government and the International Oil companies. There has been various records of quantities of oil spilled depending on the source of the data, but oil spills have attended the oil production process since its inception in the 1950s. Available records of major spill incidents show that between 1976 and 2001, there has been about 6817 oil spills resulting in the loss of about three million barrels out of which 25% was spilled into swamps and about 69% spilt offshore. Some notable spills are shown in Table 2.5(UNDP, 2006b).

Table 2.7: Notable Oil Spills in the Niger Delta

Date	Incident	State	Quantity Spilled
July 1979	Forcados Terminal Oil Spill	Rivers	570,000
Jan. 1980	Funiwa No. 5 Well Blowout	Rivers	400,000
May 1980	Oyakama Oil Spill	Rivers	10,000
Nov. 1982	System 2c Pipeline Rupture	Warri-Kaduna Abudu Edo	18,000
August 1983	Oshika Oil Spill	Rivers	10,000
Jan. 1988	Idoho Oil Spill	Akwa Ibom	40,000
1988	Jones Creek	Delta	21,548
Oct. 1998	Jesse Oil Spill	Delta	10,000
May 2000	Etiama Oil Spill	Bayelsa	11,000
Dec. 2003	Agbada Oil Spill	Rivers	Unknown
August 2005	Ugheli Oil Spill	Delta	10,000
August 2004	Ewan Oil Spill	Ondo	Unknown

Source:UNDP (2006b)

Oil spills occur through leaks or damage to oil pipelines or from accidents involving tankers, road trucks or railway cars. On-shore pollution occurs during loading and unloading operations of tankers.

Water produced with crude oil contains some chemicals injected to inhibit corrosion or enhance separation of oil form water (Nwankwo N and Ifeadi C.N. 1998:27). The disposal of produced water causes environmental pollution especially in freshwater environs. Industrial wastes like mineral, metals glass and plastics and pollute where they are dumped. Refinery wastes characteristically pollute water and air. Atmospheric contaminants include oxides of nitrogen, carbon and sulphur. Liquid refinery effluents contain oil and grease, phenol, cyanide, sulphide suspended solids, chromium and biological oxygen.

Transportation and marketing operations generate oil spills and hydrocarbon emissions. Use lubrication and comprise the single greatest type of waste oil generated in Nigeria. Other waste oils emanate from tank sludge, bitumen, slops and oily sand or sediment.

Waste-water containing oil may be discharged during the cleaning of ballast tanks and ships, tank trucks and tank cars. Other sources of waste include leaky valves and

connections and flushing of pipelines. Nwankwo (1984) lists significant pollutants for selected sources in the oil industry as contained in Table follows;

Exploration and Exploitation	Petroleum Refining	Transportation and Marketing Operations
Drilling Mud and Cuttings **Oil and Grease** **Salinity** **Sulphides** **Turbidity** **Suspended Solids** **Temperature** **pH (alkalinity/acidity)** **Heavy metals** **BoDs** **CNDs**	Oil and Grease BoDs CNDs Phenol Cyanide Sulphide Suspended Solids Total Dissolved Solids Temperature Chromium pH (acidity/alkalinity)	Oil and Grease BoDs CNDs Toxic Additives and Materials Hydrocarbons Total Suspended Solids

Source: Nwankwo (1984)

2.6.6. Impact of Oil Spills

Experiences from notable oil spills at the Funnisa, Oyakama, Ostrike, Forcados and NNPC oil spillages indicate the impact of oil spill as follows:-

i. In water, oil film on the water surface could prevent natural aeration and lead to death of marine organisms trapped below.

ii. In some cases, fish may infest the spilled oil or other food materials impregnated with oil.

iii. Oil spillage on land could lead to retardation of vegetation growth for a period of time and in extreme cases, to destruction of vegetation. It could also create potential fire hazards and render the soil unfit for cultivation.

2.7. Summary

This chapter introduced the Country Nigeria and the Niger Delta region as an integral part of the country, and the catchment area for the study. The country's economy was introduced and the dependence of the national income on the resources of the Niger Delta region highlighted. It was shown that the quest to harness the economic potentials of the region is the bane of the region's environmental problems, with the numerous environmental problems of the Niger Delta tied to the dominant industry producing the

national wealth. Since it is the environmental problems that have necessitated this study, it now behoves the study to review the various relevant literatures that will position the study in the valuation of contaminated wetlands.

CHAPTER 3.   LITERATURE REVIEW

3.1. Introduction

This chapter presents a review of the land tenure and background of the environmental pollution problem in the Niger Delta and other issues that contribute to the need for a framework for assessing damages due to contamination in the region. Since this is in the opinion of the researcher, a novel study, there is no literature that is directly linked to the subject of the research that is available in the Niger Delta context. This study reviews the valuation/appraisal practices in several parts of the world where oil pollution has caused contamination, land and other laws affecting land rights are also reviewed, and the concept of ecosystem and the valuation of environmental goods and services are reviewed, since the study focuses on wetlands. Literatures on problem solving and stakeholder theories are also reviewed to put the valuation problem in context. Drawing from all the literature reviewed, the rationale for the research is stated and a conceptual framework proposed. A conceptual framework according to Crossan (2003) explains either in graphic or narrative form, the main things to be studied, the key factors, constructs or variables and the presumed relationships among them.

3.2. Land Use and Tenure in the Niger Delta

The pattern of land ownership, utilization, and control is a critical factor in economic development and other livelihoods of the Niger Delta. The terrain of the region which consists of a small area of developable dry land and a vast array of creeks, rivers and rivulets, makes the importance attached to land more critical. It is critical because the land is not only required for residential and agricultural purposes, it is used for oil and gas exploration and exploitation. The later use is critical in determining the socio-economic well-being of the region today.

The absence of basic infrastructure and social amenities in the rural areas of the Niger Delta, results in employment (formal and informal), being largely centred on land. With the activities of the International Oil Companies (IOCs), in the region, land has become an essential commodity whose involvement in oil related activities has the potential of

transforming the lives of persons involved in such deals (George, 2009). Indigenes of the region, as land users, maintain interests in their land which are constantly impacted upon by both population growth and changes in the broader social, economic and technological environment ((Uchendu, 1979). The land tenure system consists of allodial or plenary interests and dependent or contractual occupancy. Uchendu (1979) defines allodial or plenary interests as the claim and exercise of the most comprehensive rights in a piece of land. The second category is those whose rights are dependent on the comprehensive interests.

Before 1978 Nigeria had a plural land tenure system with the south having both customary and statutory land tenure while the north practiced a system of public ownership (EBEKU, 2001b). The customary land tenure is based on the native laws and customs of the various peoples of southern Nigeria on the principle that there is a common ownership by the family or a community. The management and control of all land in a community, was entrusted to the Headman of the community or village (Ebeku, 2001). Uchendu (1979), points out that land in Southern Nigeria, had a 'folk image' as it is not a mere piece of earth but a piece of earth that produced a sense of pride and attachment that was out of all proportion to the mere two hectares a family might hold but land embodies the spirit of the Earth deity, a revered mother who blesses land with her bountiful gifts. Land is also the burial place for the ancestors, those invisible father-figures who bequeathed their land to a 'vast family' which includes the dead, the living, and the unborn. As pointed out by Ebeku, under the customary tenure, oil prospecting and production companies entered upon any land, only after reaching an agreement with the land-owning communities/families on the amount of compensation (for any damage to surface rights- e.g. farm crops or building) and compensation (annual rent for use of the land in its intrinsic state or other corporeal hereditaments). The tenure system of a nation is usually governed by the land policy evidenced by the dominant land law, which in this case it is the Land Use Act of Nigeria.

3.2.1. Land Tenure under the Land Use Act (LUA)

The LUA now known as Cap L5, LFN, 2004, which was enacted in 1978 replaced the plural land tenure by reforming the customary tenure that was prevalent in the Southern part of Nigeria including the Niger Delta. It provided in section 1 as follows:-

" Subject to the provisions of this Act, all land comprised in the territory of each State in the Federation is hereby vested in the Governor of that State, and such land shall be held in trust and administered for the use and common benefit of all Nigerians in accordance with the provisions of this Act."

Based on this provision, the Supreme Court (the highest court of Nigeria) held inter alia, that

1. The Land use Act has removed the radical title in land from individual Nigerians, families, and communities and vested the same in the governor of each state of the federation in trust for the use and benefit of all Nigerians (leaving individuals, etc., with 'rights of occupancy'); and

2. That the Act has also removed the control and management of lands from family and community heads/chiefs and vested the same in the governors of each state of the federation (in the case of urban lands) and in the appropriate local government (in the case of rural lands)

The Land Use Act now vests all land in the territory of each state (except land vested in Federal Government or its agencies) exclusively in the Governor of the State. The Governor holds such land in trust for the population and administers it on behalf and for all Nigerians. The Governor is responsible for the control and management of land in urban areas; similar powers with respect to non-urban areas are conferred to Local Governments. Each Governor is assisted by a Land Use and Allocation Committee for the management of urban lands, while each local government is assisted by a land advisory Committee for the management of rural lands. The Governor has the power to grant land to any person with occupancy statutory rights for all purposes; it is lawful for local governments to grant any person with customary rights of occupancy for agricultural, residential and other purposes. Since the enactment of the LUA, the traditional authorities of the Niger Delta communities have lost their rights and powers and are no longer able to effectively manage complaints since section 2(1) provides that "as from the commencement of this Act" –

a) "All land in urban areas shall be under the control and management of the governor of each state:

b) All other land shall, subject to this Act, be under the control and management of the local government within the area of jurisdiction of which the land is situated."

Figure 3.1 summarises the present rights that can be owned on land in the Niger Delta and the government's control over it.
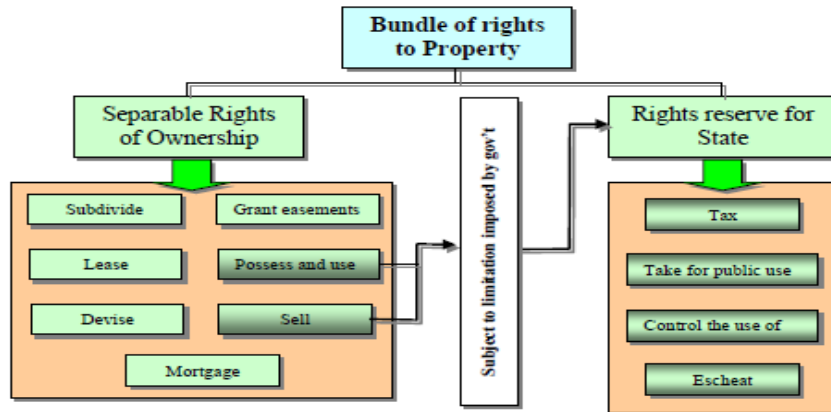
Figure 3.1: Rights Over Land in the Niger Delta

Source: Adapted from Akankandelwa (2012)

Ebeku (ibid), posited that compensation for land acquired under the Act are now paid to the governor of the state where the land is located, and not to the community Headman as before the Act. Thus the communities hardly receive any portion of the money paid or have any useful thing done for them out of the compensation. Also when any pollution occurs and the IOCs accept responsibility, they now only pay compensation for surface rights like farm crops and not for the land. Such compensations for surface rights are rarely fair and adequate and have since been noted as one of the causes of crises in the Niger Delta. The Land Use Act is considered controversial. Some see the law as pursuing a socialist egalitarian objective to ensure equitable distribution of land resources. Others object viewing the Land Use Act as inconsistent with the principles of fairness and justice because it has made it possible for land once belonging to local communities, to be taken away while corruption has risen. Furthermore, the law does not provide secure tenure to those holding an occupancy certificate, as the Governor has the power to revoke such certificates overriding public interest (e.g. way-leaves, prospecting for oil, mining activities or oil pipelines). In rural areas it seems that the Land Use Act has failed to achieve its egalitarian objectives and traditional authorities

still exert influence over land management. In urban areas, it has failed to halt speculation and has increased corruption. Pressure is currently being made to get the Land Use Act reviewed or even repealed. Due to lack of infrastructure and social amenities in the rural areas of the Niger Delta region of Nigeria, employment, formal or informal, is largely centred on land. However, with the activities of multinational oil corporations in this region, land has become a very essential commodity whose involvement in oil related activities has the potential of transforming the lives of persons involved in such land deals. More so, land, an asset under the *de facto* management of traditional institutions carries with it, in its distribution, the influence/dictates of the patriarchal traditional institution,

(George, 2009). Although, a Land Use Act exists, traditional perception of ownership of land still, to a large extent, dictates the relationship of the oil industry with their host communities since the communities are still very traditional. It is common practice for to have lands being vested either in a community or an individual. Fiberesima (1999) describes this as a form of "collective ownership" of those either living together or united by a shared interest. Where an individual owns the land, it may have been by purchase, gift allocation or by reclamation, and such individual has the right to enjoy and use their land as they deem fit during their life time and on death, pass it on to his heirs. Where the Individual dies intestate, the land passes on to his next of kin or becomes family land. Any land not owned by an individual or a family, it becomes community land and becomes vested in the Community Chief, who may share it among members of the community on an agreed basis. This practice has endured to the present time and its implications with regards to development and disposal lies at the heart of most of the land disputes in the Niger Delta. As George (2009), states that throughout the developing world, patterns of land ownership, utilization, and control are critical factors in the development process, having a particular importance for agricultural development and other livelihoods. In the case of the Niger Delta, the importance attached to land is more critical in the sense that, not only can it be used for agricultural activities alone, its involvement in the process of oil and gas exploration can be seen as a determining factor in the economic wellbeing of indigenes in the region. Table 3.1 shows the present pattern of ownership in three Niger Delta States, in spite of the LUA. It is the land ownership pattern that will fashion the determination of any compensation payable.

Table 3.1: Land Ownership in the Niger Delta

State	Communal	Family	Individual
Delta	15.4%	48.3%	36.3%
Bayelsa	12.9%	67.2%	19.9%
Rivers	17.2%	51.5%	31.3%

Source: George (2009)

From Table 3.1, these three States studied, show that most of the land ownership in each State, is held by either families (with a minimum of 48.3% in Delta State, and a maximum of 67.2% in Bayelsa State) or individuals (with a minimum of 19.9% in Bayelsa and a maximum of 36.3% in Delta States). This ownership structure indicates that there are always people to be compensated whenever land is acquired and necessitates the need to review the implications of the land ownership structure in compensation discussions, which the next section now treats.

3.2.2. Land Use and Implications for Compensation:

The subject of this research is the impact of pollution on compensation practice. It is therefore necessary to review the implication of the present land use pattern in the Niger Delta on the determination of compensation, whether for acquisition or in the aftermath of a pollution incident.

Land in the Niger Delta is economically used for the exploration and exploitation of oil, besides some agricultural use. Oil activities, impact the physical environment, the swamps, rivers and creeks. Prior to the emergence of oil production as a prominent economic activity, the inhabitants of the Niger Delta were mostly farmers and fisher men and women. The process of oil exploration and exploitation now affects the socio-cultural life of the people. The Environmental Resources Managers Ltd (1998) in the NDES Report outlines this impact as:-

- The prospecting stage by the services of seismic companies (this may damage community property and the environment in the course of their activities);
- Acquisition of land for its activities (this alienates the people from their land in an area where land is scarce both for farming and habitation). In

addition, the company may conduct dredging and gas flaring; place pipelines across land and creeks; and complete a host of other actions that potentially touch on the basic livelihood of the community;

- The actual process of oil exploitation and exploration could be hazardous. One of the very regular hazards in the region is oil pollution, which can occur from equipment failures, "act of God", and accidental spillage among others.

The UNDP (2006:187) Report categorised the impacts of oil exploration and exploitation activities as "rapid and uncontrolled urbanization, occupational changes, the loss of fishing grounds, the disappearance of livelihoods and land shortages among others". The law requires that the oil companies, who are mainly multinational companies, negotiate compensatory measures with the communities and individuals affected by their activities. In identifying who to deal with, the oil companies adhere to the land tenure practice prevailing in their area of operation on the surface, while relying on the anti-people laws of the Federation in determining the framework for assessing the compensation they pay. In practice the oil companies deal with the government in matters of land acquisition and obtain a licence to commence exploration and exploitation but they also need to obtain a "licence to operate" from their host communities by paying a "just and fair compensation", as part of their Corporate Social Responsibility. The amount of compensation paid depends on the items of compensatory interest found on the land, river, or creek. These items may be buildings, shrines, tombs, crops and trees, plants, fish ponds, fishing traps, fishing nets and animal fence. The determination of this compensation has been a major source of discontent and crisis in the Niger Delta, whether the land is being acquired or when it is polluted.

3.3. Assessment of Compensation:

None of the enabling statutes provides a framework for assessing the value of any polluted land or what the owner of a polluted land is entitled to claim for any pollution. While some of the statutes provide some heads of claim for compensation for land compulsorily acquired, others are couched in generally vague terms that have created too many disputations between land holding communities and the acquiring authorities. In practice, valuers assess properties to be acquired by following methods prescribed by the enabling statute, though in Nigeria, a curious interpretation has been given to certain

provisions in the interest of government. Interestingly, the Minerals and Mining Act, 2007 which was enacted long after the LUA, now resorts to open market valuations by a duly registered Valuer and recognises the payment for surface rights in lieu of land value, though the definition of "Surface Rights" was not given. The compensation provisions of the various statutes are shown below in Table 3.2.

Commentators on compensation assessment have stated that while buildings are valued by using the replacement cost method of valuation, economic crops, trees and other structures, are valued by using pre- determined rates commonly called the OPTS (Oil Producers Trade Section of Lagos State Chamber of Commerce and Industry) Rates.(Ogedengbe, 2007a, Akpan, 2007b) (Nuhu, 2008, Kakulu, 2008) and (Otegbulu, 2009). These commentators appear to have taken no cognisance of the Minerals and Mining Act, 2007 provisions. (Omeje, 2006) says that it is the Land Use Act that has made a theoretical distinction between land which is a property of the state and investments in land which are privately owned and that the oil bearing communities are in a vulnerable position as they can only press for compensation for economic investments they might have made on such land, which is usually grossly underestimated. George (2009), reasons that the fixed rates contained in the OPTS rates produce a compensation that is negotiable, though in practice, the bargaining position of the parties to the acquisition are hardly comparable and thus makes negotiations unbalanced.

It is noteworthy that the OPTS is a Trade group in the Chamber of Commerce and Industry with membership drawn from the Oil and Gas multinational Companies. This means that operators in the Industry decide what they should pay as compensation before they even commence an acquisition. Where the government is the acquiring authority, her valuers use predetermined compensation rates produced by the Federal or State Governments. Since reliance is made to the Land Use Act, Section 29 in choosing what method to use for assessing compensation, it is difficult to see where the use of these predetermined rates is provided for as the relevant section(c) only says that:-

> "Crops on land apart from any building, installation or improvement thereon, for an amount equal to the value as prescribed and determined by the appropriate officer."

In the bid to meet the expectations of citizens of the Niger Delta and other areas, different States produce their own Compensation Rates. There is also the rates produced by the Federal Ministry of Works for the whole country, grouping the constituent States into geo-political zones, and the Niger Delta States typically fall within the South-South geo- political zone. Samples of these various rates are shown in Appendix F. With this plethora of rates, it impossible for claimants in any compulsory acquisition exercise to know with any certainty, what their entitlement would be. Even when the oil multinational companies acquire with these rates as if they are empowered by any statute, but a review of the provisions of the various laws as shown above, does not suggest any empowerment. It is necessary to see what the practice of compensation is in other countries when compulsory acquisition is embarked on. In trying to select comparable countries, it is necessary to consider the World Bank and United Nation's categorisation of Countries around the globe. Both organisations use a measure of income of the countries whether it is Gross Domestic Product or Gross National Income. A selection of five other countries has been considered, but in addition to the international criteria, the aspect of land policy has been added. The African countries are classified as Low-income Economies while the other Countries are High Income Countries. In Africa, United Republic of Tanzania has a similar land policy like Nigeria. Kenya and Uganda have free market economies, though their land policy differs from that of Nigeria. In the developed world, the United Kingdom was chosen as her laws were the foundations of the laws of most commonwealth countries like Nigeria. Canada was chosen as she has a similar land policy to Nigeria as her minerals are nationalized like Nigeria. The only difference between Canada and Nigeria is that the nationalised minerals are vested in the States in Canada whereas in Nigeria they are vested in the Federal Government. Table 3.2 shows the provisions of various Nigerian Statutes; Table 3.3 compares Nigeria to other African countries, while Table 3.4 shows Nigeria, compared to the High Income economies.

Nuhu (2008) asserts that the compensation provisions of the Cap. L5 metes out an injustice to the land owners. This is confirmed by the heads of claim provided by the enabling statutes in the other low-income countries compared with Nigeria in Table 3.3 This assertion is further magnified when the Nigerian provisions are compared with

those of the High Income Counties of the United Kingdom and Canada in the Table 3.4 below:-

Table 3.2: Statutory Provisions for Compensation in Nigeria

LAW	LAND	STRUCTURE	CROPS/TREES	INTEREST ON DELAYED PAYMENTS	DISPUTE RESOLUTION	REMARKS
Public Lands Acquisition Ordinance (CAP, 167, LFN,2004)	Open Market Value	Open Market Value	Open Market Value	Provided For	High Court	Provision for Severance, Injurious Affection
Public Lands Acquisition (Miscellaneous Provision) Decree No. 33 of 1976, Part A	Schedule of Compensation Amounts Provided. Interest on Land Cost for 10yrs (max.)	Replacement Cost Method	As Determined by Appropriate Officer	Provided For	Lands Tribunal	Provision for Abortive Expenses (survey fees, architect's fees etc.)
Part B (Resumed State Land)	Rent paid in the year	Actual Cost as Determined by Appropriate Officer	As Determined by Appropriate Officer	Not Paid	Lands Tribunal	Reclamation works paid for.
State Lands (Compensation Decree 1968 (No 38 of 1968)	Rent paid during lease	Replacement Cost	Fair Market Value	Provided For	Silent	Value of Unexpired Term.
Petroleum Act (Cap. P10,	Fair and Adequate	Fair and Adequate Compensation	Fair and Adequate Compensation	Provided For	State Authority	Provides for productive trees, venerable objects.

LFN, 2004)	Compensation					
Land Use Act 1978 (Cap.L5, LFN, 2004)	Rent Paid during the year	Depreciated Replacement Cost	As Determined by the Appropriate Officer	Paid on Value of Structures	Land Use and Allocation Committee	
Oil Pipelines Act (Cap. 07, LFN, 2004)	No Payment for Land	Open Market Value	Open Market Value	Not Provided For	High Court	Payment for Disturbance, Severance, and Injurious Affection.
Nigerian Minerals and Mining Act, 2007	Surface Rights in lieu of Land Value	Open Market Value	Open Market Value	Open Market Value	High Court	Payment for Disturbance, Severance, and Injurious Affection

Adapted from Otegbulu, 2009.

Table 3.3: Comparison of Nigeria and other African Countries

NIGERIA	KENYA	UGANDA	TANZANIA
Main Law: Land Use Act 1978 (Cap. L5, LFN, 2004)	Main Law: Acquisition Act, Cap. 295 and Land Acquisition (Amendment) Act, 1990	Main Law: Land Acquisition Act (LAA), No.14 of 1965	Main Law: Land Acquisition Act (LAA) 1967 and Acquisition of Buildings Act 1971.
Provisions: • **Refund of Ground Rent if any** • **Buildings/Structures valued with Depreciated Replacement Cost method.** • **Crops/Economic trees valued by methods prescribed by Appropriate Officer (Use of pre-determined rates)**	Provisions: • Market Value of land taken • Injurious Affection and Severance • Damage from Loss of Profits • 15% of Market Value as Disturbance For Way leaves/Easements • Damage to trees, plants, and crops • Damage to permanent improvements on land Periodic diminution in the Profits of land and Adjoining land.	Provisions: • Cost of Land or Cost of obtaining alternative land • Buildings assessed on Depreciated Rep-Placement cost method; • Crops • Severance/Injurious Affection Loss of Trade removal Expenses • Disturbance at 15% but IF Notice to Quit is LESS THAN 6months; 30% is added; • Depreciation of Buildings at 1%-%% p.a., (Usually 2% is adopted)	Provisions: • Alternative land or equivalent Value NOT exceeding Value of land taken • Market value of unexhausted improvements; • Betterment charged on retained portion where part is taken; • Severance damage

Source: Nuhu (2008)

Table 3.4: Nigeria Compared to Developed Countries

NIGERIA	CANADA (STATE OF ALBERTA)	UNITED KINGDOM
• Refund of Ground Rent if any • Buildings and Structures valued with Depreciated Replacement Cost Method • Crops/Economic trees valued with method prescribed by Appropriate Officer (Use of pre-determined Rates)	• Entry fee per use • Market value of land rights taken • Value of land to acquiring body of Rights impacted by Right of Way; • General Disturbance • Damages- compensation for loss of crops or pasture and adverse effect of pipeline; • Fees for Professional Representation	• Market value of land taken • Market value of land taken • Severance/ Injurious Affection • Disturbance • Fees for Professional Representation.

Source: Author's Compilation (2014)

3.3.1. Statutory Provisions on Compensation

Several statutes provide basis for the payment of compensation when an acquisition of land occurs. The Department of Petroleum Resources (DPR) identifies more than 31 'principal' and 'subsidiary' legislations, including the Oil Pipelines Act of 1956, Petroleum Control Act of 1967, Petroleum Act of 1969, Offshore Oil Revenue (Registration of Grants) Act of 1971, Exclusive Economic Zone Act of 1978, the National Inland Waterways Act of 1997 and the Land Use Act (LUA) of 1978 (though not often listed as an oil-related law). The most relevant statutes are:

- Public Lands Acquisition Ordinance (Cap. 167, LFN 2004)
- Public Lands Acquisition (Miscellaneous Provision) Decree No. 33 of 1976, Part A.
- State Lands Compensation Decree, (No. 38 of 1968).
- Petroleum Act Cap. P10, LFN 2004.
- Land Use Act 1978 (Cap. L5, LFN 2004)
- Oil Pipelines Act Cap. 07. LFN 2004.
- Nigerian Minerals and Mining Act 2007.

Commentators on compensation assessment have stated that while buildings are valued by using the replacement cost method of valuation, economic crops, trees and other structures, are valued by using pre- determined rates commonly called the OPTS Rates.(Akpan 2007,Kakulu 2008, Nuhu 2008, Ogedengbe 2007 and Otegbulu 2009). Omeje (2007)) said it is the Land Use Act that has made a theoretical distinction between land which is a property of the state and investments in land which are privately owned and that the oil bearing communities are in a vulnerable position as they can only press for compensation for economic investments they might have made on such land, which is usually grossly underestimated. George (2009), reasons that the fixed rates contained in the OPTS rates produce a compensation that is negotiable, though in practice, the bargaining position of the parties to the acquisition are hardly comparable and thus makes negotiations unbalanced.

The compensation regime obtaining in Nigeria in general and in particular, the Niger Delta has assumed significance due to the importance of land and its scarcity in the Niger Delta due to the nature of the terrain. The compensation problem is compounded by the frequent contamination of the environment surrounding the industrial establishments demanding land in the region. This scenario requires a discussion of the nature of contamination as applicable to land before progressing further.

3.4. Contaminated Land

To position this study, it is necessary to introduce the subject of land contamination, having discussed how land is held in the Niger Delta. As opined by Denner (1991), cited by Syms (1997),

> 'Contaminated land is one of the many complex issues to be addressed by all those involved in ensuring protection of human health and the environment. It should be considered both in terms of its prevention and as part of the overall assessment of land for a variety of purposes and users'.

Unfortunately, there is no generally accepted definition of the term "contamination" across the different disciplines that are concerned with the environment. This view is supported by Syms (1997) when he asserted that:

> 'No standard definition exists in respect of contaminated land as the contamination of land can itself take many different forms',

and recently supported by Bartke (2011) who stated that:

> 'The concept of contaminated sites has no uniform definition in the various scientific disciplines and national environmental and soil protection laws'.

This means that different professionals from different disciplines and from different Countries, will define contamination differently, implying that there is no universal definition and none should be considered wrong but the context will be the determining factor in judging the comprehensiveness or otherwise of a particular definition. This absence of uniformity of definition has resulted in contamination being interpreted to be synonymous to pollution, and as the Collins English Dictionary supports this synonymy by defining as follows:

'Contamination is the act or process of contaminating or the state of being contaminated.

Contaminate is to make impure, especially by touching or mixing; to pollute; and

Pollute is to contaminate, as with poisonous or harmful substances.'

An attempt to differentiate both terms was made by The Royal Commission on Environmental Pollution (RCEP, 1984) of United Kingdom, when they defined them thus:

'Pollution can be defined as the introduction by man into the environment of substances or energy liable to cause hazards to human health, harm to living resources and ecological systems, damage to structures or amenity, or interference with legitimate uses of the environment. Substances introduced into the environment become pollutants only when their distribution, concentration or physical behaviour are such as to have undesirable or deleterious consequences.

For comparison, contamination can be defined as the introduction or presence in the environment of alien substances or energy, on which we do not wish or are unable to pass judgement on whether they cause, or are liable to cause, damage or harm. Contamination is therefore necessary, but not sufficient, condition for pollution.'

The above attempt implies that both terms are different and that while land may be contaminated, it may not necessarily be polluted, though both arise out of human activities. Other definitions worth considering are those of The British Standards Institution (BSI, 1988) who defined contaminated land as:

'…….land that contains any substance that when present in sufficient concentration or amount presents a hazard. The hazard may be

a) be associated with the present status of the land;
b) limit the future use of the land; and
c) require the land to be specially treated before use.'

and Smith, 1985 cited by Syms (1997)'s definition that contaminated land is

'Land that contains substances that, when present in sufficient quantities or concentrations, are likely to cause harm, directly or indirectly, to man, environment, or on occasions to other targets.'

Considering these definitions as being fairly comprehensive, the Environment Act (DoE, 1995) now provides a definition which stresses the concept of 'harm' thus:

'any land which appears to the local authority in whose area it is situated to be such a condition, by reason of substances in, on or under the land, that-

a) Significant harm is being caused or there is a significant possibility of such harm being caused; or
b) Pollution of controlled waters is being, or is likely to be, caused.'

This attempt is appears to be only a guide as the ultimate determination now lies with the local authority where the land situates. While Smith (1985)'s definition is helpful in describing the situation in the Niger Delta, it is pertinent that another country's definitions be reviewed before a choice of definition is made and considering that these definitions are generalised.

The Appraisal Foundation in both the American Uniform Standards of Professional Appraisal Practice (USPAP, 2005) and the Canadian Uniform Standards of Professional Appraisal Practice (CUSPAP, 2010)defined Environmental Contamination as:

> 'Adverse environmental conditions resulting from the release of hazardous substances into the air, surface water, groundwater or soil. Generally, the concentrations of these substances would exceed regulatory limits established by the appropriate federal, state, and/or local agencies.'

This definition does not define what constitutes a hazardous substance; the emphasis appears to be on the environment as land is taken to include the total environment, including the ecosystem. Similarly, the International Association of Assessing Officers (IAAO, 2001) while taking land for granted, defined only contamination as:

> 'any recognised physical or non-physical environmental influence that must be considered to determine value; and
>
> a) Physical contaminants are substances present in, on, or near a subject property in measurable quantities and identified as having a harmful environmental impact like toxic and corrosive substances;
>
> b) Non-physical contaminants are those that have no tangible physical substance like proximity to noise sources or power lines, and the stigma attached to a previously contaminated property;
>
> c) An environmental contaminant is any tangible substances or intangible occurrence that may degrade property, resulting in decreased utility or having an effect on value; and
>
> d) Hazardous substances are substances designated under the relevant laws as toxic or hazardous, including hazardous solid waste, toxic air pollutants, imminently hazardous chemicals and mixtures.

From the above definitions it appears that the IAAO's definition is more relevant to the study subject, except that the contaminants in the case of the Niger Delta must include the definition of pollution by the Royal Commission on Environmental Pollution and

the substances will include crude hydrocarbons, petroleum, and natural gas products. Thus the study will concentrate on polluted wetlands in the Niger Delta.

The Niger Delta region gained world notoriety due to incessant conflicts due in part to economic marginalisation and in part to the environmental contamination and pollution from the main industrial use of the region's land by the IOCs for oil prospecting, production, and distribution. The next section will therefore discuss the conflict in the region.

3.5. The Niger Delta Conflict:

The Niger Delta region has become known the world over so much because of the violence pervading it, than for the abundance of natural resources that it holds. Different explanations have been proffered for the existence of the conflict but the present conflict, has a long drawn out history, complicated by the interplay between government officials and multinational oil companies' attitude and operational modalities.(Abila, 2009) , summarises the conflict as a conflict of values amongst the oil bearing communities of the Niger Delta; multinational oil companies and the Nigerian Government. To put the conflict in perspective, we need to understand the various stages of a conflict. Best et al. (2006) decomposes a conflict into five main stages viz:

> Stage One: Pre-Conflict Stage. This is a period when goals between parties are incompatible, which could lead to open conflict. At this stage, the conflict is not well known because parties try to hide it from public view, but communications is undermined between them.

> Stage Two: This is the stage of confrontation, when the conflict becomes open or manifest. This is characterised by occasional fighting, low levels of violence, and search for allies by the parties, mobilization of resources, strained relations and polarization of the parties.

> Stage Three: This is the peak of the conflict when the conflict becomes very manifest. In violent conflicts, this is the stage of war and intense fighting, leading to killings, and injuries. Large scale population displacements occur and use of small arms and light weapons become used indiscriminately.

Stage Four: This is the outcome stage. One side to the conflict wins and another loses, or a ceasefire maybe declared; one side may surrender, or the government or the other third party intervening forces stronger than the warring parties intervene to impose a solution and stop the fighting. Violence is decreased to allow room for some discussion to commence, or an alternative means of settling the conflict is explored.

Stage Five: This is the post-conflict stage when violence has either ended or is significantly reduced. At this stage, the underlying cause of the conflict is addressed and where they are not, the conflict may re-occur.

The Niger Delta conflict has now reached the fifth stage but its origin has been variously traced by different schools of thought, beginning from the Historical Scholl, Modern School, Establishment School, Dialectical Materialism to the Reactionary School, (Abila, 2009). A summary of the philosophies of these various schools is as follows:

The Historical School: This group believes that the Niger Delta conflict started during the period the Colonial intervention, when the Minerals Ordinance of 1916 and the Minerals Act 1945 which expropriated the resources of the region by vesting all mineral oils in Nigeria in the Crown (State) was implemented. It is thus argued that the resistance predated Nigeria's independence. The conflict according to them started from after the slave trade, through the oil palm trade and the infamous Akassa raid, the Trade Treatise that followed the period of amalgamation of the Nigerian nation in 1914.

The terrain of the region has always posed challenges to development and during the independence struggles, the regional leaders had always asked for special protection for the region. Though commitments were made to them, such commitments have never been kept, leading to perpetual neglect of the region's development needs.

Notable commentators like Okonta, I. and Oronto, D(Okonta and Oronto, 2001)., identify the slave trade as laying the foundation for the present conflict as "the staggering economic cost aside, slavery abruptly and catastrophically disrupted life in the Niger delta and its hinterland, triggered inter-ethnic wars, and led to the displacement of whole communities." They point at 1444 when the Portuguese adventurer Lancarote De Fetais, came to West African coast and collected 235 persons

whom he later sold as slaves, triggering off the Trans- Atlantic Slave trade which was replaced in 1840s by the Oil Palm trade.

Elaigwu (1994), says that during the palm oil trade by the British Merchants, under the auspices of the Royal Niger Company, the region was known as the Oil Rivers Protectorate because of the volume of palm oil trade existing in the area.

Tribal leaders who resisted the predatory and oppressive tendencies of the British Merchants, were deposed and some expelled from their Kingdoms. Thus since the slave trade through the oil palm trade till Nigeria's independence, the Niger Delta region has been ruled by violence.

The Modern School: This school traces the origin of the conflict to the activities of Late Isaac Adaka Jasper Boro, who led the first secession attempt by declaring the "Niger Delta Republic". Others like James Jephthah who was a member of Nigeria' Niger Delta Peace and Conflict Resolution Committee, links the conflict to the discovery of oil and the agitations for development following the advent of petroleum wealth in Nigeria. The climax was the visit by some young men to Abuja- Nigeria's Federal Capital Territory and on seeing the developments undertaken by the government with petroleum wealth at the expense of the Niger Delta where the wealth emanated from since 1956 when oil was first drilled at Oloibiri (a town in Bayelsa in the Niger Delta), retuned to resort to militancy to demand developments and a share of the petroleum wealth.

THE Establishment School: This school blames the conflict on the present Federal Structure of Nigeria, multiplicity of ethnic groupings, and the struggle for the petroleum resources of the region. It is argued that because successive governments have tended to be populated by people originating from the majority tribes who are not located in the delta, government policies, including the revenue allocation formula, has been designed to favour the majority tribal areas, to the near neglect of the Niger delta. This practice has increased the poverty in the region, creating anger and conflict in the region. There is now prevalent mutual distrust, hatred, and suspicion amongst inhabitants, and towards the majority tribes and their friends. The divide and rule strategy adopted by both the Federal Government and their multinational collaborators, have further heightened the atmosphere of insecurity in the region.

The Dialectical Materialism School: Political Scientists like Late Claude Ake, blames the conflict on a class struggle for economic resources of the Niger Delta region, between the Federal Government and its organs, managed by the majority tribes in the country and the minority tribes in the Niger Delta region. They claim that the use of force by the Federal Government in concert with the multinational oil companies, has led to counter-use of arms in the region. They point to the following reasons as catalysts to the struggle:-

I. realisation that development can take place in the Niger delta terrain, as exemplified by the presence of all socio-modern facilities in the Flow Stations of multinational oil companies operating in the area located about a kilometre from oil-bearing communities that lived in squalor;

II. the use of multi-billion naira oil revenue for the speedy development of Abuja Capital Territory within a short period, uncovered by Niger Delta Youths, during the "One-Million –Man March" in support of the late General Sani Abacha's regime in 1995.

III. the fast growing wealth of political office holders through apparent mis-management of public funds in the Nigerian nation.

The school assets that except the material condition of the people are improved, the raging conflict will subsist.

The Reactionary School: To this school, the conflict is a response to the violence meted out to the region by succeeding governments. They believe in (Fanon and . 1963) ideology, "that those who make peaceful change impossible make violent change inevitable".

The Frustration-Aggression School: Another possible explanation of the Niger Delta crisis is the Frustration-Aggression Theory which originated from the works of John Dollard (Dollard, 1939) and Leonard Berkowitz (Berkowitz, 1989,). Frustration is defined by the Cambridge Dictionaries Online as feeling annoyed or less confident because of failure to achieve a desire. The theory postulates that deprivation is a disparity between value expectation and value capabilities. It defines the lack of need satisfaction as a gap between aspiration and achievement. It argues that when there is a gap between the level of value expectation and the level of value attainment, due to lack of capability to establish a congruence between both levels, tension builds up due to the

pressure of unfulfilled aspiration or an unsatisfied urge or need. When this is not arrested in time it leads to frustration which leads to rising anger which is often directed against the party considered to be the source of deprivation of satisfaction, since the hope and initial excitement in the Niger Delta that they would automatically be entitled to benefits that come with being oil producing communities, was considered legitimate. Oil discovery has brought hope that civilized and modern infrastructure such as electricity, pipe borne water, primary and secondary schools, well-equipped hospitals, better and more modern equipment for exploitation of the region's fish and fauna will become available. There would at last be roads leading through and linking the communities with the rest of the country. There was also the expectation that as oil companies begin to carry out their operations and implement the ideas embodied in their corporate social responsibility, more people would have the opportunity of gainful employment. But in the context of prolonged denials and frustrations, neither the oil companies nor government seem to have come to terms with these pervasive social expectations. One of the most debilitating disappointments was with human capital development.

In order to get basic education, the youth have to leave their homes in the creeks to live with relatives and friends in communities' upland, most of who often treat them as servants or even beggars. When they eventually get education to tertiary levels, most of them are unable to return to their homeland except as aggrieved and embittered citizens. They had in the process witnessed how the resources of their ancestral lands are exploited and carted away to develop other communities in the country, while their people bear the brunt of this official theft in the form of environmental degradation, political disenfranchisement, social dislocation and economic despoliation They are forced to witness how oil companies provide state-of-the art facilities for the comfort of their employees, most of whom are foreigners to their land, without adequate consideration for the needs of their hosts, even when doing so is relatively cheap and feasible. They are for instance, only willing to build roads, if such would open up new and lucrative oil fields. They are able to generate electricity to power their numerous sites within the communities, without bothering to link their immediate hosts to the same grid, even when it is cost-effective to do so. Confronted by the stark realities of unemployment in their homelands even after getting education abroad, there seems to be only one choice open to them- take and sell the resources available, directly from the

pipelines if necessary. Hence the incidence of pipeline vandalisation, illegal bunkering, and their local imperatives of gun running, cult gang building and militancy as defence mechanisms.

The continued neglect of the region and absence of any meaningful developments from the petroleum resources since the discovery of oil in the region, have persistently engaged oil companies and the Nigerian State in a series of protests. These protests have been aimed at demanding resource control and the abrogation of the policies and laws governing land use and mineral resource ownership and to ensure environmental justice in the region. Many civil society groups have now emerged to protest against environmental degradation and asking for better corporate social responsibility from the oil multinationals. Currently, the issue of environmental degradation have become the anchor for even the militant groups that now continuously cause conflict in the region.

At the heart of the Niger Delta struggle, is a protest against criminal neglect, marginalisation, oppression and environmental degradation as well as economic and socio-political hopelessness, and in one word, *frustration* in the oil bearing and contiguous communities of the Niger Delta (Afinotan and Ojakorotu, 2009).

Idemudia and Ite (2006a),argue that the Niger Delta conflict in its present form, is the result of the cumulative effect of the synergetic interplay among conflict – generating factors that have at various times worked together or individually to tilt state – society relations towards the outbreak of conflict. These are graphically illustrated in Figure 3.2 below and include:-

- Political factors (including the control by a coalition of some ethnic majority elites to the neglect of the ethnic minorities whose land the bulk of the oil resources are produced);
- Economic factors (low share of oil revenue to oil bearing States, abdication of development activities in the region to IOCs, inefficient institutional capacity to regulate the IOCs, and the combination of the State and IOCs to maximise rent);
- Environmental factors (incessant pollution leading to a decrease in fishing and farming yields in the region, and increase in health risks);
- Social factors (loss of social esteem, increase in vices, and unfairness of the judicial system which now manifests in the current feeling of marginalisation and frustration).

- Marginalisation and Poverty (manifests as the domination of employments in the IOCs by the majority tribes, non-representation of oil-bearing communities in management positions in the IOCs and non-infrastructural provisions in the oil-bearing communities).
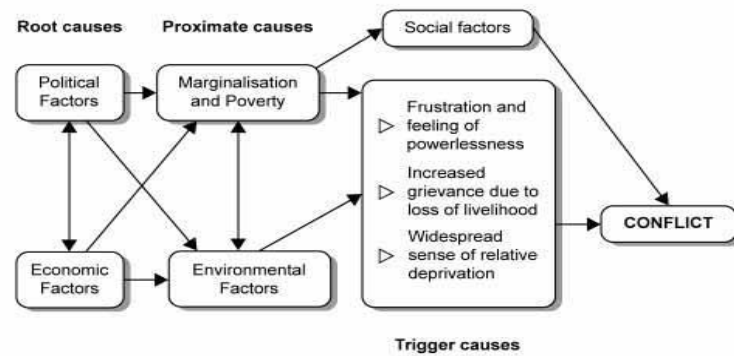
Figure 3.2Causes of Conflict in the Niger Delta

Source: Idemudia & Ite (2006)

These problems causing the conflicts emanate from the exercise of powers of compulsory acquisition and are perceived as part of the corporate social responsibility of the IOCs, so the essence of Compulsory acquisition and the theory of CSR become necessary.

3.6. Compulsory Acquisition:

Compulsory acquisition is defined as the power of government to acquire private rights in land without the willing consent of its owner or occupant in order to benefit society, (Mukherjee, Lapré et al. 1998). This power is often necessary not just for meeting the social and economic development needs of local, state or national governments, but also for the protection of the natural environment against the excesses of private businesses. Several authors have justified the need for governments to resort to compulsory acquisition of interests in land in developing economies (Sandelowski 1995, Syagga and Olima 1996, Ogedengbe 2007, Kakulu 2008, Otegbulu 2009). All these authors highlight the basis of assessing compensation payable for compulsory acquisition and

emphasise the fact that the process is statutory and that the enabling laws do provide the valuation methods to be adopted.

Creswell and Miller (2000), state the reasons why governments may acquire land compulsorily as including the need to provide social and economic amenities like hospitals, schools, police stations, markets, airports, harbours, roads and highways, open spaces, public parks, waste treatment sites and other uses for the overall benefit of the society, which are unlikely to be privately provided, the existence of perceived economic and social inefficiencies in private market operations in the production of goods and services especially involving the natural environment, and the search for greater equity and social justice in the distribution of land.

Mukherjee, Lapré et al. (1998), justifies land acquisition in a market economy as a way of correcting the mis-pricing of infrastructure and profit driven private markets often result in urban development patterns that have inadequate provision of public and urban basic services, inadequate provision of open spaces and recreational park, facilities, and inadequate protection of natural environmental systems such as wetlands, imposing restrictions on privately owned lands in favour of public goods, interests and services such as schools, hospitals, roads, and easements require governmental intervention in land development, the restrictions on the ways land can be used in terms of type and intensity help to achieve social, environmental and cultural goals. Also that urban land development patterns driven by private markets often harm the environment and natural ecological system, hurt the urban poor, and impose social costs on the society and successful implementation of urban and regional planning needs sound land management and policy. To tackle these issues, the need to address social issues like equity and justice becomes urgent and critical in fast urbanizing economies.

The FAO (2009), states that though there is variation between countries, the constitutions of many countries provide for both the protection of property rights and the power of the government to acquire land without the willing consent of the owner. They state that sustainable development requires governments to provide public facilities and infrastructure that ensure safety and security, health and welfare, social and economic enhancement, and protection and restoration of the natural environment. To achieve these goals, the FAO indicates certain principles that need to be fulfilled thus:

a) The principle of Equivalence;

b) The principle of Balance of Interests;

c) The principle of Flexibility;

d) The principle of Equal Application to De Facto and De Jure Interests; and

e) The principle of Fairness and Transparency.

To comply with these principles, examples of interests to be compensated when urban land is compulsorily acquired are given and include:

The land itself; improvements to the land, including crops; the value of any financial advantage other than market value that the person may enjoy by virtue of owning or occupying the land in question; and interest on unpaid compensation from the date of possession. Others are expenses incurred as a direct and reasonable consequence of the acquisition, loss in value to other land owned by the affected owner due to the project, (in some countries, the compensation will be reduced if the retained land increases in value as a result of the project, a condition sometimes referred to as "betterment"), legal or professional costs including the costs of obtaining advice, and of preparing and submitting documents. Costs of moving and costs of acquiring alternative accommodation, costs associated with reorganization of farming operations when only a part of a parcel is acquired, loss in value of a business displaced by the acquisition, or if the business is permanently closed because of the acquisition, temporary loss of earnings, personal hardship and other losses or damages suffered

The Asian Development Bank (1998), cited in FAO,(2009) identifies losses that may be compensated for when customary rights are acquired to include among others, income from agricultural uses, shrines, religious sites, places of worship and sacred grounds, cemeteries and other burial sites and traditional use rights.

The above literatures all include the protection of the environment as part of the reason why government may acquire land compulsorily. Despite these provisions, the issue of environmental pollution has become pronounced in recent times, especially in Nigeria where it has become attendant to the oil extraction and production process. (Ebeku, 2002) opined that damage to the environment and private properties can arise at any stage of the oil operations such as exploration, mining, production or transportation and that when it occurs, it is only fair and just that compensation be paid to the victims in

order to make amends for the loss suffered. Onwuegbuzie and Collins (2007), suggests that the Stockholm Declaration of 1972 on the Human Environment was a visionary document that provided for the preservation of a healthy environment as a fundamental right of any person. The African Charter on Human Rights (1981), in Article 24, states that "all peoples shall have the right to a generally satisfactory environment favourable to their development". The implication of these declarations is that there is a consequence for failing to protect the environment. In Nigeria, there are, in addition, several legislations providing for damages to be paid when pollution occurs.

Deinduomo (2009) opines the laws which vests the ownership and control of petroleum in the Federal Government and land in the State Governor, recognises the surface rights of third parties (e.g. owners and occupiers of land), which are required to be compensated for in the event of damage or loss. When damage to private property occurs, it is only fair and just and just that compensation be paid to the victims in order to make amends for the loss suffered.

Ding (2007) opines that, where property rights and markets are well developed, compensation for land acquisition has two components of direct compensation, which reflects the value of land taken and indirect compensation, reflecting payment for loss in value of the retained land (injurious affection).

McCallion (2011), states that the final action to be taken in the event of an oil spill is for economists, scientists and land appraisers to quantify all damages suffered. The damages may include economic losses, damages to commercial fisheries, losses suffered by fish processing companies, losses to natural resources in affected land and waters, and impairment of visual and scenic environment. In certain situations, damage for property loss may be claimed where the extent of loss can be determined objectively. Eyinla *et al* (2006) includes the claimable as damages to buildings, depletion of floral periodicity, discomfort to humans and danger of pulmonary disease epidemic and other environmental problems. No matter what ids damaged as a result of contamination, what is critical both to society in general and the property owners and users who are impacted, is the selection of a comprehensive methodology to assess fully the damages caused by environmental pollution (McCallion, 2011). There are several laws impacting on land use in the Niger Delta in view of its natural endowment as an oil producing region. The Department of Petroleum Resources (DPR) identifies more than 31

'principal' and 'subsidiary' legislations, including the Oil Pipelines Act of 1956, Petroleum Control Act of 1967, Petroleum Act of 1969, Offshore Oil Revenue (Registration of Grants) Act of 1971, Exclusive Economic Zone Act of 1978, the National Inland Waterways Act of 1997 and the Land Use Act (LUA) of 1978 (though not often listed as an oil-related law). The principal legislations providing the land policy framework that governs the operations of the oil industry and the compulsory acquisition of land are the Petroleum Act 1969 and the LUA, 1978.

While the Nigerian Constitution preserves the ownership rights of petroleum for the federal government, the Petroleum Act provides the enabling details and is the law that explicitly states that all petroleum resources in Nigeria belong to the federal government. In fact, Section 77 of the Act provides that an oil operator should pat to the landowner;

> "such sums as may be a fair and reasonable compensation for any disturbance of the surface rights of such owner or occupier and for any damage done to the surface of the land upon which his prospecting or mining is being or has been carried on and shall in addition pay to the owner of any crops, economic trees, building or works damaged, removed or destroyed by him or by any agent or servant of his, compensation for such damage, removal or destruction".

This law thus provides for the payment of compensation for damage caused by oil operations without specifying any method of valuation except to say that such compensation should be fair and reasonable. It will be safe to assume here that the test of reasonableness is the normal legal test as it applies in everyday meaning of the word. Akpan (2005) opined that the petroleum laws draw some strength from the LUA and that the provisions of both enable us see the abuse of the use of compulsory acquisition powers.

3.7. Corporate Social Responsibility in the Niger Delta

To be able to understand the Niger Delta conflict and the rationale for a new Valuation paradigm, it is necessary to review the concept of corporate social responsibility in the Nigerian Oil Industry. (Idemudia, 2011)Idemudia (2007, citing Utting, 2002) stated that the emergence of corporate social responsibility (CSR) practices in developing countries is a relatively new

phenomenon, though its ideas have long been expected by their host communities. Though it is generally accepted that regional differences exist in the CSR practice between regions, there is a consensus that it has not been what it promised, especially in the Niger Delta. In today's world, it has become increasingly difficult for corporations to avoid responsibility for the social and environmental impact of their actions, as they affect the lives of their host communities with regard to product safety, environmental protection, maintenance of employer's health and consumer's protection.

To understand the impact, we need to define and conceptualise CSR. Corporate Social Responsibility (CSR) is a concept whereby organisations consider the interests of society by taking responsibility for the impact of their activities on customers, suppliers, employees, shareholders, communities and other stakeholders, as well as the environment[1].

Wood (1991) , stated that the basic idea of corporate social responsibility is that business and society are interwoven rather than distinct entities. In expanding this,(Moir, 2001) stated that CSR now covers a wide range of issues such as plant closures, employee relations, human rights, corporate ethics, community relations and the environment. He cited CSR Europe, a membership organisation of large companies across Europe as including in its guidelines areas like:

- Workplace (employees);
- Marketplace (customers, suppliers);
- Environment;
- Community;
- Ethics; and
- Human rights.

There are basically two views of CSR. There are those who adopt the neo-classical view of the firm, led by Milton Friedman who stated that "Few trends would so thoroughly undermine the very foundation of our free society as the acceptance by corporate officials of a social responsibility other than to make as much money for their shareholders as they possibly can". This is the business case of CSR which sees a firm's responsibility as being to its shareholders only. The second group accept the view that since businesses have resources and skills, there is a quasi- moral obligation to assist in solving social problems whether or not business helps to create those problems even if there is probably no short-run profit potential. CSR Europe's

approach is that business benefits from being more socially responsible and that this can help to build sales, the workforce and trust. This is the active CSR and its proponents propose practices built around stakeholder analysis and engagement, including understanding stakeholders' aspirations and needs and then communicating with and interacting with stakeholder groups. Moir (2001) identified three theories as being useful in explaining the attitude of firms and corporations, to CSR practice. These are Stakeholder theories, Social contract theory and Legitimacy theory.

Mitchel et al defined a stakeholder as persons, groups, neighbourhoods, organizations, institutions, societies, and even the natural environment. The stakeholder theory seeks to explain who the stakeholders are and why an organization should consider their views in formulating its operating policies. They identify different categories of stakeholders ranging from latent, dormant, discretionary, demanding, expectant, dominant, dependent, dangerous and definitive, depending on whether they possess the attributes of power, legitimacy and urgency. Weber (1947) defined power, as the probability that an actor within a social relationship would be in a position to carry out his own will, despite resistance. A stakeholder has power, to the extent it has or can gain access to coercive or normative means, to impose its will in the relationship. Care must be taken to define the nature of this power to be legitimate rather than illegal as possessed by militant youths. Urgency on the other hand, is the degree to which stakeholder claims call for immediate attention as currently prevailing in the Niger Delta. These various categories they argued are not static but dynamic and thus a stakeholder could move from one category to another. It is this dynamism that can explain the sudden emergence of the Niger Delta indigenes as an important component in the oil exploration and production equation.

Citing Gray *et al,* Moir (2001) asserted that society consists of a series of social contracts between members of society and society itself and that in the CSR context; this means that society expects business to operate in a particular way. Thus the social contract theory explains why businesses operate to meet societal expectations.

The Legitimacy theory originated from Churchman (1995) who defined legitimacy as a generalized perception or assumption that the actions of an entity are desirable, proper, or appropriate within some socially constructed system of norms, values, beliefs and definitions. Legitimacy is seen as a key reason for undertaking corporate social behaviour and also using that activity as a form of publicity or influence as it is being practiced in the Niger Delta

currently, following the spate of conflicts that have been experienced there. Within the Nigerian context, minerals are nationalised, so also the radical title to land. The occupiers of any land like the Niger Delta hold only the usufructuary rights over the land and only possess legitimacy and urgency but no power and cannot be too influential in determining the behaviour of multinationals operating in the region.

Definition of Corporate Social Responsibility:

Several definitions have been proffered by different authors on what CSR is. Doane (2005) defined CSR as a term describing a company's obligations to be accountable to all of its stakeholders in all its operations and activities. The World Business Council for Sustainable Development (WBSCD, 1999), initially in 1999, referred to CSR as 'the continuing commitment by business to behave ethically and contribute to economic development while improving the quality of life of the workforce and their families as well as of the local community and society at large '. In 2002, the WBCSD modified its definition to 'the commitment of business to contribute to sustainable economic development, working with employees, their families, the local community and society at large to improve their quality of life'. The European Union in its European Commission's Green Paper of July 2001, defined CSR as 'a concept whereby companies integrate social and environmental concerns in their business operations and in their interaction with their stakeholders on a voluntary basis'.(Blowfield and Frynas, 2005) , opined that this perspective is not shared by everyone, especially the emphasis on voluntarism and that there are many intersections between CSR and the law. They also stated that while the origin of the current CSR concept may have been Anglo-Saxon, the meaning of CSR can differ from one society to another and illustrated this with example of a question by the WBCSD as to what CSR means to people from different countries; Thailand stressed environmental issues while Ghanaians stressed empowering local communities.(Nwafor, 2010) stated that CSR is a concept that is as broad as it is complex, with diverse approaches, and with no recognised standard. His study identified the need to:-

I.   incorporate sustainable indicators like poverty alleviation, welfare and cultural issues, concern for women, children and good behaviour;

II.   alignment of CSR objectives with the goals of participatory decision making by incorporating roles for local communities;

III.   greater transparency by civil society by adhering to democratic principles in planning and revenue utilisation for the provision of economic and welfare infrastructure;

IV.   enthronement of accountability and inclusion of ethical and moral concerns in the CSR process.

No matter the definition adopted, the basic essentials of CSR as listed by Blowfield and Frynas (2005) are:-

a. `that the companies have responsibility for their impact on society and the natural environment, sometimes beyond legal compliance and the liability of individuals;

b. that companies have a responsibility for the behaviour of others with whom they do business (e. g. within supply chains); and

c. that business needs to manage its relationship with wider society, whether for reasons of commercial viability or to add value to society.

In pursuing the inclusion of these essentials, certain reasons have been put forward for adopting CSR in business practice. These reasons include among others the following:

- managing risk and reputation to obtain a competitive advantage;

- maintaining a stable working environment;

- managing external perceptions and responding to consumer demands protecting human capital assets and keeping employees happy; and

- avoiding regulations.

Basically, these reasons are the business case of CSR (that is the use of social initiatives to attain corporate objectives), which believes that the social responsibility of business is to increase profits. Blowfied and Frynas (2005) stated that since the 1980s, the managers of profit-making enterprises are now openly advocating the adoption of CSR in their businesses, though there is no consensus why the concept has gained prominence in recent times. Despite the increase in acceptability of the concept, there is reservation on its success thus far as Doane (2005), posited that CSR has proved to be often little more than a public relation offensive to support business-as-usual in most cases. Frynas (2005) stated that the case for CSR is far more contentious in the developing countries since it is a Western construct where there are comprehensive environmental regulations in place, virile labour unions and a wealth of consumer demands prevailing, unlike the developing countries where these conditions are lacking. The Niger Delta is a typical scenario where its characteristics is typical of a developing region described by Visser (2005) as (a)being one of the most rapidly-expanding economies and therefore, most lucrative growth market for oil business; (b) it is a location

where social and environmental conflict are most acutely felt; and (c) it is where globalisation, investment and economic growth are likely to have the greatest social and environmental impacts. In practical terms, CSR practice in the Niger Delta involves the provision of social amenities like roads, school buildings, health centre projects, rural electrification, market stalls, water projects, town halls and civic centre buildings and drainage projects. Hardly has any oil Multinational Corporations (MNCs) engaged in any environmental improvement scheme in the Niger Delta, in spite of the fact that CSR has its origin in the consideration of the operating environment of business concern, further supporting Doane (2005) that CSR is used as a public relation stunt.

It is possible to proffer reasons for the present state of CSR practice in the Niger Delta as pointed out by Ite (2004), that the failure of the Nigerian state to provide and/or actively encourage social and economic development in the Niger Delta has led to the reliance by even the government and the Niger Delta communities on the oil MNCs. He states that Nigeria's economic and social policies and public administration have clearly accentuated poverty in the Niger Delta, more than any other region of the country. The result of this has been the evolution of a mind-set and culture incessant demand on the of dependence on the oil companies operating in the Niger Delta. The poverty has led to an unending demand from the oil companies for 'development', the refusal of which has led to continued conflict. The requisite conditions for the success of CSR were given by Fox *et al* (2002) as:

(a) Government playing a mandating role by defining minimum standards for business operations,

(b) Provide incentives for companies to engage in CSR agenda in a facilitating role;

(c) Participate by identifying priorities or incentives that are meaningful in the local and national context; and

(d) Support the concept of CSR by deliberate policy documents rather than just making speeches.

Clearly these conditions are lacking in the Nigerian context hence the claim by (Ite, 2004) that the enabling environment for CSR in Nigeria is either lacking, yet to be developed or at best ineffective. It is this ineffectiveness that has perpetuated the Niger Delta conflict.

3.8. The Historical Development of Value

The interpretation and application of the concept of value has evolved gradually according to circumstances, needs, and societal perspectives. Kerry (2007) posited that value concepts evolved not only across societies, as society and economies became more complex, they evolved for separate purposes, ranging from transactions to tax assessments to financing and that though initially value theory was pragmatic, evolving in an ad hoc fashion to serve the purpose at hand, the various approaches eventually became associated with a paradigm and a "discipline" that provided a consistent framework for undertaking the exercise of valuation. In terms of training, he stated that the Education and training in the field during the childhood and adolescent phase of development evolved also – from informal oral traditions handed down among those involved with various aspects of real estate, to more formal apprenticeships, then to the written word and formation of associations, to professional training, and finally to an evolving formal academic discipline within our institutions of higher learning . From this, it is obvious that the theory of value as applicable to real estate developed as the need arose. We can trace development through certain distinct periods from the Medieval, Classical, Austrian to the Modern times and practice.

3.8.1. Medieval Times:

During this time, markets which were defined by individual negotiations between buyers and sellers continued to characterize real estate markets (and still do to the present day), "Value" in this case was whatever proved to be the price or other terms agreed on by the principals under the circumstances of the exchange. Market participants formed normative notions of their reservation prices, for any piece of real estate based on historical experience and handed- down wisdom. The decision of what can be traded as a property right was made only by the ruling class or the Church for example; the notion of 'just price' was embodied in the writings of St Thomas Aquinas as documented in his Summa Theologica.

3.8.2. Classical Economists:

The foundation for understanding how economic forces interacted to achieve the production, pricing, and distribution of goods was laid by classical economists who included Adam Smith, Thomas Malthus, and David Ricardo. Smith recognized that a revealed market "price" through sale was not necessarily the same as market "value" which he regarded as "natural value". Kerry (2007). Smith is credited with developing the concepts of 'value in use' and ' value in exchange' which is still very useful today in real estate transactions and with the reasoning

that rent was a price-determining cost of production. Malthus disagreed with Smith and argued that rent represented a price-determined surplus return to the land owner, a view that influenced Ricardo's theory of land value where rent represented an over payment in excess of all other costs of production.

3.8.3. The Austrian School:

This school included Menger, vonWieser, and Bohm-Bawerk and focused on the demand side of the market and utility theory. They are credited with the theory of imputation, where they argued that the value of the whole is equal to the value of the components, a theory that has influenced the modern day theory of the bundle of rights associated with real estate. The present day income approach to valuation is linked to the Austrians' theory of interest and time-preference as well.

3.8.4. The Neoclassical School:

This period marked a merger of the classical school's supply side and the Austrian school's demand side to form market equilibrium. The most notable member was Alfred Marshall who fully developed the concepts of demand and supply with their intersection constituting the determination of price equilibrium. Marshall recognized that everything in the economy must affect everything else and thus believed that 'partial equilibrium' solutions for value change must be valid only in the short run.

3.9. Valuation Theory:

Fanning et al. (1994), stated that Appraisal is concerned with the estimation of value, which may be approached on three distinct theoretical levels namely, value theory, valuation theory, and appraisal theory. They went further to say that Value theory and Valuation theory is traditionally defined by economics. Value theory is concerned with establishing the basis of an asset's worth. It identifies why real estate has worth. Valuation theory focuses on the techniques or methods through which value is measured, estimated, or forecast. Elaboration of the three approaches to estimating value has been the principal domain of valuation theory. Appraisal theory is the logical process linking valuation theory to value theory, as applied to a land put to a specific use. Appraisal theory refers to a procedure in which an individual identifies a problem, formulates a hypothesis, collects and classifies data, applies a methodology, and develops a conclusion.

Value theory is still developing and practitioners adjust their methods as they face new economic challenges. Modern value theory, regards land as an agent of production on equal pedestal as labour, capital, and co-ordination unlike the Ricardian theory of land rent being production-determined. Lawson (2008), posits that what has been stated in the past as Valuation theory has in fact been the methodology of valuation and accepts as theory, assertion by Ratcliff (1972) that 'the New School discards the notion of value measurement in favour of the concept of market value appraisal as a process of behaviouristic analysis, as economic forecasting under conditions of uncertainty.' The American Institute of Real Estate Appraisers in the third edition of 'The Real Estate Appraisal' stated that

'the concept of value has always had significance, but that it has been interpreted differently at various times. Current appraisal theory of real property value builds on historical interpretations and recognises that value theory changes in response to external influences. Much of current value theory derives from classical and neo-classical economics, which combined supply costs and demand utility into a unified concept. Appraisers today recognise that the interaction of supply and demand affects property value. However, they also recognise that supply and demand is affected by numerous other influences in the market.'

From the above discussions, we can state that our Valuation Theory is concerned with the present definition of Value by market participants. The IVSC (2003) stated that, 'Valuation is an opinion of the price that would be obtained in a transaction or the benefit that would accrue to the owner of an asset based on a stated hypothesis'. It is therefore appropriate for us to review the practice of valuation in the bid to understand the current theory of value.

3.9.1. Valuation Practice

Valuation is the quantification of an understanding of the various factors influencing value, like the market, legal impacts, physical constraints, planning regime, availability of finance, the demand for the product and the general economic influences affecting value. It is thus the process of determining or estimating the price of exchange in the market place. The end result of the valuation process is value, no matter how defined. In this study, what is important is the market value of the degraded resource. The International Valuation Standards Council (IVSC, 2007) defined market value as: "*the estimated amount for which an asset should exchange on the date of valuation between a willing buyer and a willing seller in an arm's length*

transaction after proper marketing, wherein the parties had each acted knowledgeably, prudently and without compulsion"

While this definition may not hold sway when pollution occurs, it provides the minimum basis with which to assess the damages resulting there from. French and Gabrielli (2004) stated that a fundamental valuation model should reflect the role of property as an asset to the owner/business where market data is unavailable as is the case with most polluted environments. It needs be stated that what is sought in the valuation of any polluted site, is the quantification of damages suffered from the pollution and not compensation for loss.Mooya and Cloete (2007) stated that market value defined as above, adopts a positivist stance which assumes as follows:

i.   That market value exists independently of the valuer, thus differentiating market value from market prices and that market price is the true evidence of market value;

ii. That market value can be known with certainty, and it exhibits empirical regularities such that it can be represented by mathematical symbols and formulae; and

iii. That the valuer adopts a positivist approach in the process of determining market value. He examines market evidence dispassionately to arrive at an appropriate conclusion.

Adam Smith (1776), stated that value sometimes expresses the utility of some particular object, and sometimes the power of purchasing other goods which the possession of that object conveys. The one may be called 'value in use', the other 'value in exchange'. To Karl Marx, the dominant factor is labour; "all commodities are only definite masses of congealed labour time". Alfred Marshal thought value is "relative and expresses the relationship between two things at a particular time". To the valuer, value is a function of the total income or return that can be obtained from a property in the future or the power that the ownership of the property represents as a medium of exchange, either for other property or for money. Value is a word of many meanings and may define different scenarios like loan value, rental value, insurable value, going concern value, rateable value, market value, or replacement value, depending on the purpose of the valuation. Unless expressly qualified, when valuers refer to value, they normally mean market value. This will be the meaning adopted in this study.

Value is affected by both intrinsic and extrinsic factors as shown in Figure 3.3 below.
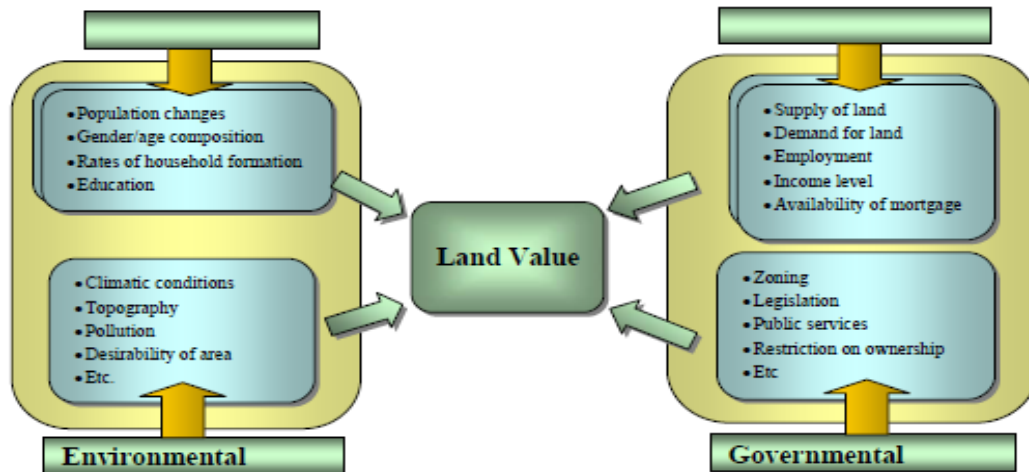
Figure 3.3: Factors Determining Land Value

Adapted from Akankandelwa (2012)

Abbot (1987) lists the intrinsic factors as topography, soil, plot size and shape, improvements, utilities or services, title, property rights and interests and the extrinsic factors as accessibility, location, climate, zoning, or land use planning, taxation, building restrictions and consumer preferences. He states that when considering 'value in use', the intrinsic factors may dominate and when considering the 'value in exchange', the extrinsic factors may dominate. Value broadly defined, is the relationship between something owned and an individual who wishes to own it. (ANZL, 2007). Valuers are frequently required to advice on one type of value or the other and a professional valuer must distinguish between the subjective relationships that exist among people. In doing this, the valuer identifies a particular type of value as the basis of his valuation. Valuation bases may be any of the following:

  i. Market Value;   vii. Depreciated Replacement Cost;

  ii. Existing Use Value;   viii. Market Rental Value

  iii. Fair Value;   ix. Marriage Value

  iv. Value in use;

  v. Alternative Use Value;

  vi. Negative Values;

The most commonly sought basis, is the market value as defined by the IVSC (2007). The IVSC (2007) states that value is an economic concept referring to the price most likely to be

concluded by buyers and sellers of a good or service that is available for purchase and that value is not a fact, but an estimate of the likely price to be paid for goods and services at a given time in accordance with a particular definition of value. The economic concept reflects a market's view of the benefits that accrue to one who owns the goods or receives the service as of the effective date of the valuation. Market here, refers to an environment where goods, services and commodities are traded between buyers and sellers through a price mechanism.

The concept of a market implies the ability of buyers and sellers to carry on their activities without restriction. (IVSC, 2007). The concept of market value is tied to the collective perception and behaviour of market participants, thus the market-based valuations assume the operation of a market in which transactions occur without restrictions by non-market forces. It is essential for market-based valuations to identify and include the definition of market value used in the valuation. Such valuations are developed from data specific to the appropriate markets and through methods and procedures that reflect the deductive processes of participants in those markets (IVSC 2007). Common valuation methods used include Comparison, Cost and Income Capitalisation. Pagourtzi et al. (2003) groups valuation methods into Traditional and Advanced methods thus:-

Traditional Methods	Advanced valuation methods
Comparable method	Artificial neural networks (ANNs)
Investment/income method	Hedonic pricing method
Profit method	Spatial analysis methods
Development/residual method	Fuzzy logic
Contractor's method/cost method	Autoregressive Integrated moving average(ARIMA)
Multiple regression method	
Stepwise regression method	

Inspired by Pagourtzi et al (2003)

3.9.2. Valuation Methods:

There are three internationally recognised methods of property valuation and they are all based on the principle of market comparison (Wyatt, 2007). The principle of comparison encapsulates the basic economic principles of price equilibrium, anticipation of benefits or

substitution. The three methods are (1) sales comparison or market approach; (2) income capitalisation or income approach; and (3) replacement cost or cost approach. While these three methods are internationally adopted, there are now some advanced methods of valuation that are now emerging and being promoted by academics but fast gaining acceptance in the professional world. These advanced methods are the contingent valuation methods and the hedonic pricing models. Also in the Niger Delta as well as all over Nigeria, these methods are supplemented with two other methods namely the residual method and the profits method.

3.9.2.1. Sales Comparison Method or Market Approach**:**

This method provides an indication of value by comparing the subject property/asset with identical or similar property/assets for which price information is available (IVSC, 2013). The principle of comparison is based on the economic concept of substitution that a knowledgeable and prudent person would not pay more for a property than the cost of acquiring an equally satisfactory substitute (Wyatt, 2007). According to the Appraisal Institute (2008), this method adopts a systematic procedure as follows:

  i.   Research the competitive market for information on similar properties that have been recently sold, listed for sale or are under contract. Review firstly the characteristics of the sale including the property rights conveyed, conditions of sale, financing, and market conditions; then review the characteristics of the property in terms of its location, size, and specific features. The goal is to find a set of comparable sales as similar as possible to the subject property to ensure they reflect the actions of similar buyers.

  ii. Verify the information by confirming that the data obtained is factually accurate and that the transactions reflect arm's-length market considerations.

  iii. Select the most relevant elements of comparison in the market that defines market behaviour and develop a comparative analysis for each element. These elements of comparison include the key transaction information and may be price paid per square metre, price per square foot, market rent, yield, etc.

  iv. Compare the subject property with the comparables and adjust for differences in the selected elements, using the most similar sale properties.

v.   Reconcile the various value indications produced from the analysis of the comparables according to the elements of comparison to a single value indication.

Wyatt (2007) opined that the comparison method is predicated on comprehensive and up-to-date records of transactions and is therefore a reliable method in an active market where recent evidence is available. He cautions that the method's reliability is limited when market conditions are volatile or when valuing specialised properties with less market evidence. While comparable data may be sourced from public records like court house records or government sales tax records; commercially available data from subscription services; published news articles; interviews with market participants like other valuers, lenders, parties to the transactions, the Appraisal Institute (2008) also cautions that such secondary data may lead to incorrect conclusions about values and as such require further research before being adopted as true market comparables. In addition to selecting similar properties and restricting the search to very current sales, the USPAP, (2005) requires that such data must not be more than three years prior to the date of use. The IVSC (2013) suggests that where recent transactions are few, that it may be necessary to adjust the information from other transactions to reflect the differences with the subject transaction and the basis of value and any assumptions to be adopted in the valuation being undertaken.

This method has the attraction of being easy to understand and apply and in urban areas; there is always sufficient data to indicate the expected price in the market. Wyman et al. (2011) point out that while it may produce a useful guide as to eventual transaction price, using the method alone does not always disaggregate the impact on value of key variables like location, vista, size, etc.; it is not often helpful in estimating marginal impacts to properties from exposure to disamenities like towers, turbines or transmission lines. The method only gives the estimated value based on the subjective opinion of valuers which may differ with what the market indicates. Other weaknesses of the method include the fact that the adjustment process is rather imprecise as the weighting of the adjustments are very subjective and not subject to any quantitative measures. In the context of the Niger Delta, the dearth of market data renders the method incapable of application especially when valuing contaminated wetlands for which market data rarely exists. Generally in the less developed economies where reporting of transaction values is rarely done, the method is subject to manipulation to suit the caprices of

the valuer. These weaknesses notwithstanding, the method can be helpful in determining the key variables that create value (Wyman *et al*, 2011).

In its practical application, especially to contaminated wetlands, this method may be applied in one of three variants. These are (1) a whole-to-whole analysis; (2) a sum-of-the-parts analysis; and (3) a residual analysis. In applying these variants, Keating (2002) reminds us that most wetlands are a mixture of both uplands and wetlands which is the common occurrence in the Niger Delta, and both components need to be jointly valued. In a-whole-to-whole analysis, the valuer identifies similar wetlands that have the same composition of wetland and upland and compares it with the subject wetland on a gross acreage or hectare basis, adjusting for differences if any in the characteristics based on market extracted data.

    i.   Sum- of-the-Part Analysis:

In a sum-of-the-part analysis, a separate estimate is made of the value of the upland portion, basing the estimate on comparison of characteristics extracted from the market; another estimate is also made of the wetland portion in a similar manner and summing up both estimates to derive the value of the whole wetland. This method derives from the formula:

$$V_o = (UV_w \times U_w) + (UV_u \times U_u)$$

Where

V_o = Market value of the whole property

UV_w = Unit value of wetlands

UV_u = Unit value of uplands

U_w = Units of wetlands

U_u = Units of uplands

This formula allows the use of available data from the market for another land type, for cases where there is no available data for complete wetland sales, and making the necessary adjustments.

The residual analysis is used where there is evidence of a whole-to-whole sale, and evidence of one component of a wetland say upland or wetland but not both, then

solving mathematically, the residual component can be found. It is useful when the value of the component land types must be estimated and there is insufficient information to make a sum-of-the parts method viable (Keating, 2002).

3.9.2.2. Income or Investment Method:

Traditionally, the investment method is used to value properties held as investments. The owner of an investment property passes occupation rights to a tenant by granting him a lease. The tenant pays rent to the owner (landlord), and the level of rent is determined by the supply of and demand for that type of property in the occupier market. To the landlord, the rent represents the income return on the investment in the property, so its capacity to keep pace with or exceed the rate of inflation is critical to its investment value which is determined by calculating the present value of the rental income flow (Wyatt, 2007). This method entails converting the future cash flows from the property over its useful life to a single current capital value (IVSC, 2013). The process of converting annual or a stream of incomes to a capital value is known as income capitalisation or discounting. The Appraisal Institute (2008) distinguishes between two variants of the income capitalisation, one known as direct capitalisation which describes a situation where a single year's income is divided by an income rate or multiplied by an income factor to derive a capital value; and the other where a stream of future income or benefits is converted into a capital value by discounting them at an appropriate discount rate (DCF analysis) or applying an overall discount rate reflecting the estimated income profile, anticipated change in value and yield rate, known as yield capitalisation, while the IVSC (2013) identifies the methods that fall under the income approach to include the above two and various option pricing models.

Income capitalisation involves certain basic steps as follows:

  i.   Identify the income and expense data for the subject property and the identified comparables;
  ii. Estimate the potential gross income of the subject property by adding the rental income and any other potential income;

iii.   Estimate losses due to void periods and collection difficulties;

iv.   Deduct the estimated losses from total potential gross income to determine the effective gross income of the subject property;

v.   Determine the total operating expenses for the subject property by totalling all fixed expenses, variable expenses, and any applicable replacement allowance;

vi.   Derive the net operating income by deducting the total operating expenses from the effective gross income, (for discounted cash flow analysis, the deduction of capital allowances will occur at the stage where they are incurred);

vii.   Estimate the capital value by applying either the direct or yield capitalisation technique.

As attractive as the income approach is, it suffers some deficiencies that minimise its use on a wholesale basis. For instance, the estimate of future incomes and expenditures is fraught with difficulties due to the dynamic nature of the global, national, and local business cycles. The choice of future yield to be used for capitalisation is also a source of uncertainty; and the possibility of projected depreciation or any deviation from the highest and best use, would distort the income available to the unimproved land and leave the value of improvements extremely uncertain. In spite of these reservations, this method still offers the best opportunity to capture the exact returns from the land or building being valued.

3.9.2.3. The Replacement Cost or Cost Approach:

This method is predicated on the possibility that, as a substitute for the purchase of a given property, one could construct another property that is either a replica of the original or could offer comparable utility (Wyatt, 2008). The Appraisal Institute (2008) states that the cost approach is a set of procedures through which value is derived by estimating the current cost to construct a reproduction of (or replacement for) the existing structure, including an entrepreneurial incentive, adjusting for depreciation in the structure and adding the land value to arrive at the value of the subject property. In practice, the method determines value on the economic principle that a buyer will pay no more for an asset than the cost to obtain an asset of equal utility, whether by purchase or by construction (IVSC,

2013). The method which is most suitable for valuing new or proposed construction where the proposed improvements represent the optimal use of the land and the land value is well supported, is based on the principle that the price that a buyer would pay in the market for the property being valued would not be more than the cost to purchase or construct an equivalent property unless undue time, inconvenience, risk or other factors are involved (IVSC, 22013). It may also be used to determine the market value of special-purpose properties or properties that are rarely traded in the market. Bowes (2011) summarises the process of applying this method as follows:

i.   Estimate the value of the site as though vacant and available to be developed to its highest and best use.

ii.   Determine which cost basis is most applicable to the assignment: reproduction cost or replacement cost.

iii. Estimate the direct (hard) and indirect (soft) costs of the improvements as of the effective date of the valuation.

iv.   Estimate an appropriate developers profit or incentive from analysis of the market.

v.   Add estimated direct costs, indirect costs, and developers profit or incentive to arrive at the total costs of the improvements.

vi.   Estimate the amount of depreciation in the structure and, if necessary, allocate it among the three major categories: physical deterioration, functional obsolescence, and external obsolescence.

vii. Deduct estimated depreciation from the total cost of the improvements to derive an estimate of their depreciated cost.

viii. Estimate the contributory value of any site improvements that have already been considered.

ix.   Add site value to the total depreciated cost of all the improvements to develop the market value of the property.

x.   Adjust the value conclusion if any personal property (e.g. furniture, fixtures, and equipment) or intangible assets are included in the appraisal assignment.

The cost approach suffers some deficiencies such as the issue of physical, economic, and functional depreciation which generally complicates the attempt to calculate the building value due to the imprecise nature of their computation; the use of the method requires few comparable constructions whose price can be measured accurately through the examination of sales data. Such number of properties may not represent the broad property market; it also requires extensive survey of the potential market for the proposed building, but such surveys are better done for a target individual rather than a hypothetical person. This method remains the choice method for specialised properties and most statutes prescribe its use, especially for compulsory acquisitions in the Niger Delta.

3.9.2.4. Subdivision Development Method:

This method estimates the likely price to be paid for land with development potential. It is more suitable when estimating the bulk sale value of improved plots rather than undeveloped land and has been mostly adopted for the valuation of residential land. The method entails:

i. Creation of a sound development plan;

ii. Develop a realist forecast of sale prices;

iii. Forecast likely plot absorption rate and possible price mix;

iv. Estimate the phasing of land development and all related expenses;

v. Develop a marketing plan, forecasting the marketing and other sales expenses;

vi. Estimate annual real estate taxes;

vii. Estimate cost of overheads and likely profit allowance;

viii. Determine the expected discount rate; and

ix. Select a discount rate that reflects the timing of the plot sales.

This method is a type of discounted cash flow technique and relies on the accuracy of the market-derived estimates and the valuers' research skills and mastery of the development process. It has been criticised as the least accurate land valuation method for the following reasons:

i. It may indicate an inaccurate highest and best use analysis;

ii. Inaccurate estimates of expenditures required to generate forecast sales revenue;

iii.   It may involve overstated project income or failure to accurately graduate the plot prices as the development progresses in phases; and

iv.   The uncertainty of the financial markets make it difficult to estimate with any degree of accuracy, the likely discount rate and the application of such rate may lead to inaccuracy of price estimates.

3.9.2.5. Land Value Extraction Method:

As the name implies, this is a method for determining land value from market sales of a developed property where the building is so dilapidated that it has no useful life remaining or say in an industrial neighbourhood with decrepitated industrial buildings. The rationale of this method is that the sale price includes a component of value ascribable to the building and therefore the land value can be determined by deducting the value of the improvements. Boykin (2001) recommends the following steps for applying this method:

i.   Confirm the sale price of each comparable sale, noting if possible how much the purchaser assigned to the improvements.

ii   Determine the intended use of the improvements when the property was bought.

iii   Estimate the salvage value of the improvements less demolition expenses and noting the state of the improvements.

iv   Deduct the net salvage value of the improvements from the sale price to determine the land value.

iv   Add demolition costs in excess of salvage value as these will add to the price paid by the purchaser.

This method will be very useful in development areas where purchasers buy with the aim of redeveloping for instance in urban centres and old industrial estates.

3.9.2.6. Advanced Valuation Methods:

Lorenz and Lützkendorf (2008) stated that though the Advanced Valuation Methods are termed 'methods', they should be better termed 'data analysis methods' or 'decision support tools' for valuers, as many of them are used for the

construction of automated valuation models (AVM), and they are poor in reporting the specific characteristics of single properties. They are better suited to enrich the data information base for valuers. Despite the availability of all these methods, the widely used methods are those listed in the IVSC. The other traditional methods will not be examined further in this study as they are rarely used for the valuation of single properties in view of their peculiar nature in terms Of Data Requirement And Use By The Market.

3.10. The Value Sought in a Valuation

The process of a typical valuation is aimed at establishing the market value of the subject property as defined by the valuation bases adopted. The generally accepted definition of market value is that provided by the IVSC as stated earlier. This definition appears hypothetical and presumes that market participants are always reasonably informed about the nature and characteristics of the real estate asset that is being traded in the market, its actual potential uses and the state of the market. There are questions raised by this presumption, for instance Lind (1998) asked:-

I.   What shall we really demand of an actor to call him/her prudent and knowledgeable?

II.   Is it really possible to find out whether certain actors acted prudently and knowledgeably, and is it therefore possible to judge whether certain observed prices can be used as evidence about the market value?

III.   Are most actors interested in what they actually might get, or actually have to pay, in the current market, and not the price in some hypothetical market where actors have characteristics different from those that actors in the actual market have?

These issues become more relevant when we consider a compulsory acquisition by the State. Here the real estate owner might have no interest in selling at the current market price and may have difficulties in finding a comparable property. Accepting the forced value, dictated by the compulsory taking, will lead to the owner losing money just because other sellers may not have acted prudently. It can be argued therefore that the definition of market values for compensation should differ from the ordinary market value definition. Whipple (1993) has argued that the willingness of a buyer and a seller is always related to specific price and as such, the concept of "willing buyer " and "willing seller" have no clear meaning. He therefore

concludes that no conditions about willingness of sellers or buyers should be included in the definition. Other definitions of market value have been suggested thus:-

i.   The most probable price, as of a specified date,….for which the specified property rights should sell after reasonable exposure in a competitive market under all conditions requisite to fair sale, with the buyer and seller each acting prudently, knowledgeably, and for self-interest, and assuming that neither is under undue duress (American Institute of Real Estate Appraisal, 1992).

ii. The most probable selling price…. (given a period of time….in accordance with the typical market behaviour for this kind of property). (Ratcliff, 1965, pp. 36, 38);

iii. The Mallinson Report (1994) on page 23 states that the definition should be such as to reach "highest achievable degree of certainty and the narrowest room for divergence of views between valuers". There should be few subjective judgements as these would undermine the reliability of the definition. A definition is said to be reliable if there are no "doubts about the valuer's ability in all markets and for all properties to reach a proper value".

Clearly, the peculiar situation when acquisition or pollution occurs is excluded from the market value definition when the TIAVSC (1981) in the explanatory appendix to their Standard stated that:

"[a willing buyer] refers to one who is motivated, but not compelled to buy. This buyer is neither over-eager nor determined to buy at any price. This buyer is also one who purchases in accordance with realities of the current market, and with current market expectations. [a willing seller is neither over-eager nor a forced seller, prepared to sell at any price, nor one prepared to hold out for the best price attainable in the open market after proper marketing, whatever that price may be."

The occurrence of pollution leaves the property owner with no choice but to ask for compensation for the value of the polluted property that has been damaged and so the owner does not have the luxury of waiting for the best price the market can offer. A similar fate also befalls the owner of any property subject to compulsory acquisition. These instances thus calls for a different definition of value incorporating the conditions stated by Lind (1998) thus:-

I. The definition should not include references to prudence and knowledge of buyers and sellers primarily because this leads to a definition with questionable relevance for a market with very heterogeneous agents

II. The definition should not include reference to willing buyer and willing seller, primarily because these terms are redundant given the condition of proper marketing.

III. The reference to expected price or most probable price in the definition of market value should be interpreted in terms of rational degree of confidence in a price in a certain interval and not in terms of relative frequencies.

It is the view of this study that the correct definition of value of a contaminated/polluted land will be one that does not include the need for a willing seller and buyer.

3.11. The Admissibility Criteria to Valuation Practice

Kerry (2007) posited that each of the historical schools of thought contributing to the development of value theory, provided a unique perspective on the foundations of what resulted in the proper price for any economic good in scarce supply, including real estate. He said that while they influenced political movements, they did not affect the practice of valuation of real estate or other goods which remained market determined. The professional business of real estate as presently practiced, began in the nineteenth and early twentieth centuries when the first institutions developed. Initially, the various sectors of the real estate business evolved as separate components like development, transactions, financing, taxation, and management and this witnessed the emergence of associations representing builders, developers, property managers, landlords, investors, lenders, mortgage bankers, brokers and appraisers and consultants. This development occurred differently depending on the geographical region starting with the United Kingdom which set up the umbrella body of the Royal Institution of Chartered Surveyors (RICS) in 1863. This body soon evolved into separate specialisations of Estate Management, Brokerage, Valuers, and other related fields. This structure was adopted by the Commonwealth countries including Nigeria. Canada started with the British system but later changed to the American model.

In the United States of America (USA), the first body was the National Association of Realtor which was organised in 1908 in Chicago as the National Association of Real Estate Exchanges and later merged with the Counsellors of Real Estate, the Institute of

Real Estate Management, and the Commercial Investment Real Estate Institute. Those relating to appraisal now belong to different organisation beginning with the American Institute of Real Estate Appraisers set up in 1932. The early twentieth century saw the emergence of training institutions with the publication of books, working papers, and journals intended to support professional theory and methodologies in valuation. Today, real estate economists now dictate the pace of development in the practice of valuation. There is now two broad views of valuation viz:-

i. The objective view which views valuation as science and tries to adopt scientific paradigm of inquiry, where conclusions are based on evidence observable by others. Kummerow (2003) stated that nearly all academic writers on valuation methods and probably a strong majority of practicing valuers would say that valuation aims to follow the scientific paradigm. This is contradicted by empirical evidence of Crosby (2000), Havard (2001), and Aluko (2007), who all found that two experienced valuers valuing the same property will report significantly different values. A pure science should result in the same value no matter who valued.

ii. The subjective view of valuation as an art which seeks to interpret behavioural characteristics of real estate market participants and relies on the fact that available evidence is insufficient to allow drawing of unambiguous conclusions. Even where sophisticated methods of valuation is used to predict value, the result will always be an average which may not hold in the real world. Most valuation assignments fall within this category thus indicating a divergence between theory and practice. This weakness notwithstanding, we must adopt a procedure to study the practice of valuation.

Most practicing valuers belong to a professional organisation which has developed over the years. These organisations have procedures for qualification to practice valuation. In a study conducted by Morgan (1998), he listed the procedures for England and Germany thus:-

3.11.1. England

In England professions are likely to have demonstrated the following phases and characteristics in their progression from low to high status occupations: (1) Full-time

occupation. Professions evolve initially through specialisation which, as a first step to professionalization, leads to a particular job task becoming a full-time occupation.

(2) Establishment of articles system. Training is initially mainly by imitation in England in contrast to higher education in continental Europe. This training by imitation becomes refined and formalised by the articles system under which a professional trains articled assistants.

(3) Professional association formed. In order to obtain more status and to be better able to compete against less competent practitioners, a professional association is usually formed with membership limited to the better qualified or more prestigious practitioners.

(4) Introduction of qualifying examinations. In order to stress the high level of competence, professional associations soon introduce qualifying e examinations, initially on a voluntary basis but, in due course, mandatory for all new members.

(5) Political agitation for legal protection of specific work areas and/or Royal Charter. The professional associations soon begin political agitation for legal protection of their profession or certain areas of their work or, if this is not possible, for a Royal Charter. A Royal Charter is initially a convenient way to incorporate. Subsequently it is seen as giving high status and helping to protect members of the professional association from competition from non-chartered practitioners. Legal protection is only granted in exceptional cases where this is seen to be in the public interest – the granting of a Royal Chartered becomes the usual way of obtaining still higher status.

(6) Academic routes to qualification established in co-operation with higher education authorities. Academic routes to qualification are established to increase standards and status. In due course they gradually replace the professional associations' own professional examinations, although some form of vocational training, with or without an examination, is necessary before one is granted full membership of the professional body in question. The professional associations remain in control of the system of professional education by means of course accreditation.

(7) Rules introduced to ensure continuous professional development. It became recognised that professionals have to retrain their skills constantly in order to remain professionally competent. Various measures are taken by the professional associations to ensure there is some form of Continuous Professional Development (CPD). Initially this is on a voluntary basis. In due course it becomes mandatory and subject to monitoring through the professional associations.

(8) Professional associations remain responsible for education. Despite g rowing government intervention in the profess ions to prevent restrictive practices and protection of the public , professional associations generally remain responsible for professional education.

(9) Professional societies largely self-regulating. Also, in spite of government intervention as above, professional societies generally remain largely self - regulating. The responsibility f o r supervising such h statutory regulations which are introduced is largely delegated back to the professional associations in question.

3.11.2. Germany

In Germany professions are likely to demonstrate the following phases and characteristics in their progression from low to high status occupations:

(1) Full-time occupation. This is identical to the English model.

(2) Local licensing introduced. In a typically feudal way, professions are generally controlled by the local lords, states and later by the municipal authorities through various systems of licensing. It is seen as important in such non-democratic societies to control all who could usurp political power.

(3) Academic degrees introduced by the state for areas it considers desirable. The state is responsible for the university system and in the course of the nineteenth and twentieth centuries gradually expands the subjects taught beyond the classics, law and medicine, introducing new academic degrees at both universities and technical high schools for areas where the state perceives a need for higher level education.

(4) National professional associations formed. As recognisable professions evolve, local professional associations are founded, but are usually in the form of registered common interest groups, which are controlled or supervised by the authorities. With the unification of Germany in 1871, national professional bodies are set up on a similar basis.

(5) Admission to professions considered to be of public and state concern, regulated by the state on a "chamber" basis. The "chamber" system of regulating professions is gradually expanded to those professions where the state perceives the need for academic qualifications and a common system of entry and supervision throughout the federal states.

(6) The state retains responsibility for professional education and entry to the professions. Entry to high status professions is by academic degree, state examination and membership of a professional chamber; entry for low status professions is by examination by the Chambers of Industry and Commerce. In both cases the state, in effect, remains responsible for professional education and entry to the professions. The voluntary professional associations generally only play a minor role in these areas.

(7) Professions remain largely state-regulated. The chamber system is generally controlled and supervised by the individual federal states on the basis of a national statutory framework enacted by the central government. State regulation of both high and low status professions leaves only little scope for professions to be self-regulating as in England.

3.11.3. The Niger Delta:

Valuation in the Niger Delta is undertaken by Valuers who are known as Estate Surveyors and Valuers and belong to a body of Professionals who are members of the Nigerian Institution of Estate Surveyors and Valuers (NIESV). Kalu (2004) stated that the NIESV has its roots from Britain with its Rules , Ethics, Standards of Practice, Qualification, Experience being compatible with those of similar Institutions in Britain and the Commonwealth like the Royal Institution of Chartered Surveyors (RICS) However, unlike the RICS , the NIESV is a professional body concerned only with Property valuation and estate surveying excluding other Surveying fields involved in

Building, Quantity Surveying, Geomatics, Environmental Management, and Planning. NIESV members only practice Property Valuation, Facilities and Property Management, and Plants and Machinery Valuations.

Majority of members of NIESV qualify after graduation from either a Polytechnic or a University. Nigerian Polytechnics award the Ordinary National Diploma (OND) and Higher National Diplomas (HND) while Universities award Bachelor of Science (B. Sc) or Bachelor of Technology (B. Tech.) degrees. The minimum standards for the award of OND/HND are set by the National Board of Technical Education (NBTE) while those for the award of degrees in Estate Management are set by the National Universities Commission (NUC). The graduates are from accredited institutions are registered and licensed to practice by the Estate Surveyors and Valuers Registration Board of Nigeria (ESVARBON) who collaborates with the NBTE and NUC , to regulate the training institutions. The NIESV has a job training programme leading to full membership of the Institution and subsequently registration with ESVARBON (Kalu, 2004). All tertiary institutions in Nigeria, offering courses leading to pre-qualification for membership of NIESV, name their departments, Estate Management. Kalu (2004) sees this as a misnomer and states that Appraisal is usually associated with investment analysis while Valuation involves the determination of market value at a given date and this is not in any way reflected in the name of the departments and the degrees they award.

It is noteworthy that the foundation fellows of the profession had their training from Britain. The NIESV was founded in the late in 1964 but was only legally recorganised in 1975 vide Decree 24 of 1975 (now Cap. E. 13 Laws of the Federation of Nigeria, LFN, 2007).Pursuit of a career as an Estate Surveyor and Valuer requires a basic qualification of HND or B.Sc. / B. Tech. degree from an accredited institution and after undergoing some probationary years for requisite practical experience, before undertaking the professional examinations of NIESV. The course contents of the training institutions are harmonised by the NUC and NBTE. The institutions are required to offer the courses approved by the regulating bodies or they are denied accreditation. In the approved programmes, an HND lasts four years divided into two stages, with the first two years terminal examinations leading to the ward of the National Diploma and successful candidates proceed to a one year industrial attachment and on successful completion, embark on the last two years for the award of an HND.

This qualification provides the middle level technical manpower needs of the Country. The degree programme course contents provided by the NUC are the minimum benchmarks to be adopted by the institutions or they will be denied accreditation. The courses are uniform and run for five years including a supervised student industrial work experience for one semester. The core courses are valuation, property management, land use and resources, taxation, land law, investment appraisal and professional practice. Students are also exposed to statistics, mathematics, information technology, accountancy, building, land surveying, public health engineering, business law, urban and regional planning, economics, agriculture, research methodology, etc. The curriculum on advanced valuation covers issues of compensation emanating from various statutes but does not cover issues of compensation from environmental degradation which are essentially non statutory. (Kalu, 2004). He further states that the practice of agricultural valuation Nigeria is defective as the practice of counting of trees and crops and multiplying by a predetermined rate has no valuation basis, though Universities teach agricultural valuation using the investment approach.

The academic institutions' programmes only provide the basic education required by the Professional and Registration body to admit any person into their membership. While the Nigerian Institution of Estate Surveyors and Valuers (NIESV) is the professional body, registration and licensing is done by the Estate Surveyors and Valuers Registration Board of Nigeria (ESVARBON). The NIESV was set up by former members of the Royal Institution of Chartered Surveyors (RICS), after their training and practice in Britain, in 1964. The body was legally recorganised in 1975 when the law setting up the ESVARBON was passed as Decree No. 24 of 1975 (now Cap E. 13 LFN, 2007. The Institution was set up as a professional body with the following objectives:

- To establish a high and reputable standard of professional conduct and practice in the landed profession throughout Nigeria;

- To secure and improve the technical knowledge of its members and facilitate the acquisition of such knowledge by close collaboration with Universities and other Institution of higher learning and other professional bodies;

- To promote the general interest of the profession and maintain and extend its usefulness for public good; and

- To acquaint the public with the role of Estate Surveyors and Valuers in the economic development of Nigeria.

To qualify for admission into the institution, a prospective applicant will be required to sit for and pass some professional examinations of the institution, depending on the candidate's entry qualification. There is a choice between attending a University and obtaining a degree or a Polytechnic and obtaining a diploma certificate. While some Universities and Polytechnics are accredited by the Registration Board, others are not. Candidates, who graduate from an accredited University with a degree in Estate Management, sit for a Professional Practice Examination (PPE) and if successful, proceed to serve a two year probationary period in an approved professional office, keeping a Dairy and Log Book during the period. At the end of two years, the candidate writes a 5000 words thesis and attends the Test of Professional Competence (TPC) examinations. If successful, the candidate is admitted into the Corporate membership of the Institution and becomes an Associate of the Nigerian Institution of Estate Surveyors and Valuers (ANIVS). The candidate then applies to the ESVARBON for registration to practice as an Estate Surveyor and Valuer and attends an interview. If successful, he becomes registered and can now practice as a Valuer in Nigeria. Applicants who graduate from un-accredited Universities follow the same route but must first sit for and pass the Institution's Professional Qualifying Examination Stage 3 (PQE 3), before attempting the PPE.

Candidates, who graduate from accredited Polytechnic programmes, must pass the PQE 3 before writing the PPE. Polytechnics award either the Ordinary National Diploma (OND) or the Higher National Diploma (HND). HND graduates from un-accredited programs are required to sit for the Institution's Professional Qualifying Examinations (PQE 2) stage two and follow this route. OND holders from accredited programmes also enter from PQE 2 while those from un-accredited programmes enter the profession from writing the Professional Qualifying Examinations (PQE 3) stage three. Persons without any academic qualification but work in professional Estate Surveyors and Valuers' offices can enter the profession by starting from the stage three of the institution's examinations. There are no accredited postgraduate programmes at present that qualify any candidate for admission, but those with postgraduate degrees from overseas present their certificates to the Education Committee of the Institution for

evaluation and placement at the appropriate point of entry. The same condition applies to graduates from allied disciplines who desire to enter.

The Registration Board (ESVARBON) is the regulating body set up as a parastatal of the Federal Ministry of Works to supervise the practice of Estate Surveying and Valuation in Nigeria. It is the body that determines who is a Valuer in Nigeria and who can practice the profession. By the law establishing it, its functions are:

a) Determine who are Estate Surveyors and Valuers;

b) Determining what the Standards of Knowledge and Skills are to be obtained by persons seeking to become registered as Estate Surveyors and Valuers and reviewing such standards from time to time for the purpose of raising them;

c) Securing the establishment and maintenance of a register of persons entitled to practice as Estate Surveyors and Valuers and the publication from time to time of the lists of such persons;

d) Regulating and controlling the practice of Estate Surveying and Valuation in all its aspects and ramifications and;

e) Performing the other functions conferred on the Board by the Act.

Beside these, there are Rules and Regulations made by the Board for the practice of Estate Surveying and Valuation as provided for under Section 18 (1) of the Act.

This dual stream of control and determination of who becomes a Valuer in Nigeria differs from the British model where training and supervision of valuation practice is centralised in the RICS. A comparison of the entry routes into the profession also indicates some difference, as the RICS even accredits some postgraduate degrees and has three different routes to membership (MRICS) and another route to the Associate (ARICS). While the British framework is more comprehensive, the Nigerian system appears more restrictive and discriminatory in admitting prospective entrants.

In terms of the scope of practice while an MRICS may major in any field spanning Property, Construction or Land with their respective areas of specialisation, an ANIVS

is a generalist and does not specialise. Specifically, a MRICS may specialise in any of the following Figure 3.4.

Figure 3.4: RICS Areas of Specialisation

In Nigeria, all the allied professionals have their own professional organisations like the Nigerian Institute of Quantity Surveying, Nigeria Institute of Town Planners and the Nigerian Institute of Surveyors. Like the Estate Surveyors and Valuers, they all also have their regulating Boards as parastatals of the Federal Ministry of Works. Clearly these split of professions encourage unhealthy rivalry and sometime competition for each other's jobs. The basic training of prospective Estate Surveyors and Valuers, equips them to practice on qualification, Valuation of all types of property, Property and Facilities Management, Land Administration Investment Analysis.

3.12. Valuation of Ecosystems and Wetlands:

3.12.1. Introduction:

An ecosystem is defined as a complex set of relationships among the living resources, habitats and residents of an area. It includes plants, trees, animals, fish, birds, micro-organisms, water, soil and people. It is a term derived in 1935 from ecology and system. Ecology is defined by the English Dictionary as a system involving the interactions between a community of living organisms in a particular area and its non-living environment.

A wetland is an ecosystem that bridges the gap between terrestrial and aquatic ecosystems. It is an area of land that is wet for all or part of the year like swamps and marshes. It usually contains some level of water and it is fed by creeks, streams, or even underground springs. It is a natural and important habitat for frogs, birds, turtles, molluscs, periwinkles, oysters and serves as a fish nursery. The Ramsar Convention defines it as "……areas of marsh, fen, peat land or water, whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salt including areas of marine water, the depth of which at low tide does not exceed six metres. " They are generally lands where saturation with water is the dominant feature determining the nature of soil development and the type of plant and animal communities living in the soil and on its surface and generally occupy about 6% of the world's land surface. The Niger Delta physical features appropriately fit this description hence it is classified as the World's third largest wetland. Since wetlands are part of the ecosystem, the valuation techniques used for ecosystem valuation, naturally applies to wetlands, in view of our focus on the Niger Delta wetlands, our subsequent discussions will focus on the valuation of wetlands, drawing from the composition of ecosystems. Wetlands are generally divided into three categories thus:

I.   marine/ coastal wetlands,

II.   inland wetlands, and

III.   Manmade wetlands.

Ecosystem goods and services derive their nature from the ecosystem functions. Ecosystem functions is defined by de Groot et al. (2002a) as the capacity of natural processes and components to provide goods and services that satisfy human needs,

directly and indirectly. They state that the functions are a subset of ecological processes and ecosystem structures and that each function is the result of the natural processes of the total ecological sub-system of which it is a part. Natural processes are equally the result of complex interactions between living organisms and chemical and physical components of ecosystems. Curtis (2004) defines ecosystem services as the products of the role that ecological systems play in providing sustainable environment for life support, such as clean air, clean water, food, habitat and recreational opportunities. Turner et al. (2010), state that one of the most widely cited definitions, is the Millennium Ecosystem Assessment (2005) definition which describes ecosystem services as "the benefits that people obtain from ecosystems which include provisioning services like food and water, drought, land degradation, and disease, supporting services such as soil formation and nutrient cycling, and cultural services such as recreational, spiritual, religious and other nonmaterial benefits". This definition was also adopted by Swallow et al. (2009) who said that the concept of environmental services refer to the positive benefits that people obtain from the environment and that these include forests and landscapes which are categorised into watershed protection, biodiversity conservation, atmospheric regulation(including greenhouse gas mitigation), and landscape beauty. Some authors have defined ecosystem functions as the internal functioning of the ecosystem and sometimes as the benefits derived by humans from the properties and processes of ecosystems like food production and waste treatment. In this study, it is considered that the definition of the Millennium Ecosystem Assessment is more comprehensive and will be adopted. When broadly defined, ecosystem functions can be grouped into four categories of Regulating/Stabilisation, Habitat Regeneration/Supporting, Production, and Cultural/Information functions.

Regulating/Stabilisation functions refer to the capacity of natural and semi-natural ecosystems to regulate essential ecological processes and support systems to maintain ecosystem health. This enables the ecosystem to provide those essential services that support human lives. The habitat regeneration/supporting function is the ability of natural ecosystems to provide refuge and reproduction habitat to wild plants and animals and thereby contribute to the conservation of biological and genetic diversity and the evolutionary process. The production function is the provision of food and organic materials used by plants and animals to support the food chain. In fulfilling the cultural and information function, natural ecosystems provide opportunities for

reflection, spiritual enrichment, cognitive development, recreation and aesthetic experience. (De Groot et al, 2002). Examples of the ecosystem functions and the associated goods and services are shown in Table   below.

3.12.2. Valuation of Wetland Ecosystem Goods and Services:

Heal (2000) cited in Berkes and Folke (1998), states that valuation is a way of organizing information to help guide decisions but is not a solution or end in itself. It is one tool in the much larger politics of decision making and wielded together with financial instruments and institutional arrangements, allow individuals to capture the value of ecosystem assets. The Millennium Ecosystem Assessment (2005), defines "Valuation" as the process of expressing a value for a particular good or service in terms of something that can be counted, often money, but also through methods and measures from other disciplines (sociology, ecology and so on) According to the Oxford English Dictionary () the term value is used in either of three ways:

I.   Exchange value, which refers to the price of a good or service in the market;

II.   Utility which refers to the use value of a good or service; and

III. Importance, referring to the appreciation or emotional value attached to a given good or service (e.g. the emotional or spiritual experience some people have when viewing wildlife or natural scenery.

While valuation has been mostly used in real estate investments as a branch of economics, Winkler (2006) opines that the literature on environmental valuation is based on two distinct foundations of ecology and economics. He states that while ecological valuation methods derive values by a cost of production approach, the economic valuation methods focus on the exchange value of ecosystem services. Ecological valuation methods are either based on an energy theory of value or on an economic-ecological analogy. In the first case, they are based on the principle that the solar energy is the primary input to the ecosystem and that one can derive the exchange values of goods and services in the ecosystem in terms of the numeraire solar energy.

Table 3.5: Functions of Ecosystem Goods and Services

FUNCTIONS	GOODS AND SERVICES
Gas regulation	Maintenance of air quality and Influence on climate
Climate regulation	Maintenance of favorable climate
Disturbance prevention	Storm protection and Flood prevention
Water regulation	Drainage and natural irrigation Medium for transport
Water supply	Provision of water for consumptive use
Soil retention	Maintenance of arable land Prevention of damage from erosion/siltation
Soil formation	Maintenance of productivity of arable land and natural productive soils
Nutrient regulation	Maintenance of healthy soils and productive ecosystems
Waste treatment	Pollution control/detoxification; Filtering of dust particles Abatement of noise pollution
Pollination	Pollination of wild plant species and Pollination of crops
Biological control	Control of pests and diseases and Reduction of crop damage
Habitat Functions	
Refugium function	Maintenance of commercially harvested species Maintenance of biologic and genetic diversity
Nursery function	Hunting, gathering of fish, game, fruits etc. Small-scale subsistence farming and aquaculture
Production Functions	
Food	Building and manufacturing, e.g. lumber, skins. Fuel and energy, e.g. fuel wood, organic matter. Fodder and fertilizer
Raw materials	Improve crop resistance to pathogens and pests Other applications like health care
Genetic resources	Drugs and pharmaceuticals; Chemical models and tools Tests and essay organisms
Medicinal resources	Resources for fashion, handicraft, jewellery, pets, worship, decoration and souvenirs like furs, feathers, ivory, orchids, butterflies, aquarium fish, shells etc.
Ornamental resources	
Cultural/Information Functions	
Aesthetic information	Enjoyment of scenery like roads, housing etc.
Recreation	Travel to natural ecosystems for eco-tourism, outdoor sports, boat cruising etc.
Cultural and artistic information	Use of nature as motive in books, film, painting, folklore, national symbols, architect, advertising, etc.
Spiritual and historic information	Use of nature for religious or historic purposes (i.e. heritage value of natural ecosystems and features)
Science and education	Use of natural systems for school excursions, etc. Use of nature for scientific research.

Source:De Groot et al. (2002b)

These methods explicitly consider the internal structure of ecosystems and emphasize the connectedness of different ecosystem entities. Their main weakness is that the derived values do not indicate how the ecosystem products contribute to human well-being and it is difficult to justify theoretically. The economic valuation methods emphasise the importance of consumer preferences and focus on the exchange value of ecosystem services, which is the trading ratio of these goods and services. Where they are traded in the market, the exchange value would be their market price. Since most of the ecosystem services have public good properties, there is no simple way to introduce markets for these services. While economic valuation methods incorporate the relationship between humans and the wetland ecosystem products, they do not reflect the internal structure of ecosystems or the interdependencies of different ecosystem entities. They also do not capture the ethical aspects of ecosystem valuation. Despite the attraction of these views of value, Winkler (2006), defined value as the contribution of an action or object to user-specific goals, objectives or conditions and opines that the valuation of ecosystem goods and services has no virtue in itself but is merely a tool to guide human actions towards an efficient and sustainable use of natural resources.

Economic valuation is often undertaken to influence a decision. It is important to consider carefully, the decision the valuation advocacy intends to influence. Being based on the view of the ecosystem as a source of goods and services for consumption and other inputs for production, economic valuation is influenced by human use or enjoyment of the environment. Though it has been argued that it is either impossible or un-necessary to value ecosystems as we cannot place value on such 'intangibles' as human life, environmental quality or long-term ecological benefits, valuation is done unintentionally every day. When construction standards are set for highways, bridges and the like, we are in fact valuing human life as spending money on construction would save lives. Since ecosystem goods and services provide outputs and outcomes that directly and indirectly affect human wellbeing, valuation is necessary as it will contribute to better decision making by ensuring that policy appraisals take into account, the costs and benefits to the natural environment and the implications of new developments on human wellbeing. To highlight the place of value in ecosystem management, De Groot *et al* presents the figure 3.5 below as a framework for an integrated valuation.
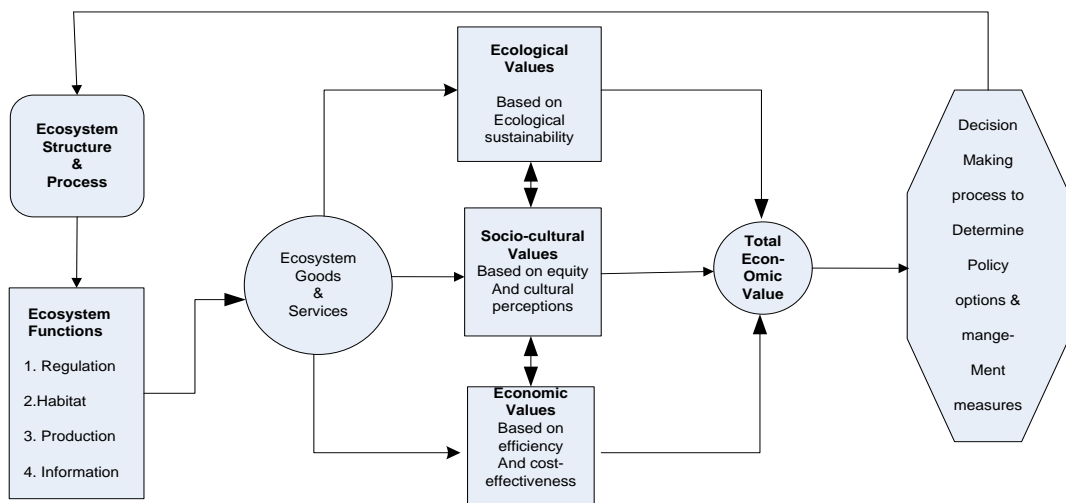
Figure 3.5: Framework for Valuing Total Economic Value of a Wetland
Source: De Groot, Wilson et al. (2002)

3.12.3. The Importance of Wetland Valuation:

Like other wetlands, the Niger Delta is subject to intense and growing pressures for development of residential, commercial and industrial development of oil and gas. Wetland species are harvested at very high rates and the scourge of pollution has pervaded the region and given it an identity. Heavy loads of industrial and domestic wastes are discharged untreated into the marsh. The combination of all these has led to serious degradation over time and these pressures continue to intensify. Land use decisions have been based on a development imperative that favours constant modification of the wetland for economic advancement of the nation. The attendant pollution that follows the production and evacuation of oil and gas has been allowed to continue without the economic value of the goods and services being considered, not being factored into the development decisions. The region's biodiversity and natural ecosystems continue to be reclaimed, degraded and lost because they are seen as being "value-less" especially when compared to the gains from oil and gas production, whose revenue sustains the national economy.

Generally, the RAMSAR Convention in de Groot et al. (2006) stated other reasons why wetlands need to be valued to include:

I. Market failure to capture the value of public goods because of their peculiar characteristics of being   like water purification or flood prevention;

II. Market failure to reflect the full social costs or benefits of a change in the availability of a good or service like the price of sea foods do not fully reflect the impact of pollution which destroys the natural habitat and make such foods scarce;

III. Policies that stimulate over use of the wetland like the creation of a subsidy for the production of shrimps, inadvertently leads to the destruction of the mangrove vegetation and further diminishes the protection services offered by the wetland;

IV. The multiplicity of stakeholders leads to a multiplicity of values and unequal distribution of costs and benefits, as some stakeholders may indulge in over-use not minding the costs and some may actually impose costs on others unintentionally. For example, when a wetland is affected by pollution upstream no matter how the pollution is caused, those living downstream will suffer losses that may not be compensated for;

V. Lack of clear ownership boundaries. Most wetland ecosystems do not have a natural boundary and may straddle between different administrative boundaries like between local government areas. In such situations, it becomes difficult for one administrative unit to manage such wetland use like controlling the harvesting of mangrove forests;

VI. The neglect of user- stakeholders in decision making and policy formulation about the use and management of wetlands leads to non-implementation of policies no matter the benefits. In some cases, it leads to non-appreciation of the importance of a particular wetland by policy makers.

Howarth and Farber (2002) opined that valuation is particularly useful in settings where institutional arrangements like markets are not functioning well to reflect the social costs of environmental degradation and that decision about conservation or restoration can lead to misuse of resources when not guided by some concept of value. Daly and Cobb (1989) stated that at the macro level, ecosystem valuation can contribute to the construction of indicators of human welfare and sustainability. Emerton and Kekulanda

(2003) argued that while economics is very important, it is often a neglected component of wetland assessment. That whereas biological, ecological and hydrological methods are relatively well established, little work has been carried out on developing and applying economic assessment techniques to wetlands. This is particularly true of the Niger Delta which has a very high economic value and occupies a significant position in the national classification of regions because of the preponderance high quality hydrocarbon deposits. Since economic forces account for the degradation and loss of the region's ecosystem, and where conservation is contemplated, it requires a range of economic management policies, it is critical to determine the economic value of the ecosystem of the Niger delta wetland. The aim here is to determine value of the wetland with a view to highlighting the policy implications of its use, degradation or loss.

3.12.4. The Composition of Wetland Values:

The RAMSAR Convention in de Groot et al. (2006), decomposed wetland values into three main types of ecological, socio-cultural, and economic values. The sum total of these three types make up the total economic value (TEV) of a wetland ecosystem, though each has its own set of criteria and value units (indicators). TEV as a concept first appeared in an essay by Peterson and Sorg (1987) titled: "Towards the measurement of total economic value". It was thereafter used by other environmental economists like Turner et al. (1993). Initially the definition concentrated on use value until (Krutilla, 1967) identified its double feature to include non-use values. Scholars after Kurtilla have since concentrated on an empirical analysis which allows them to identify the main features especially of non-use value and the different methods useable for their measurement. Today, environmental economists have settled on an agreed typology for the different components of total economic value to consist of use value and non-use value. These various value types can be illustrated thus:
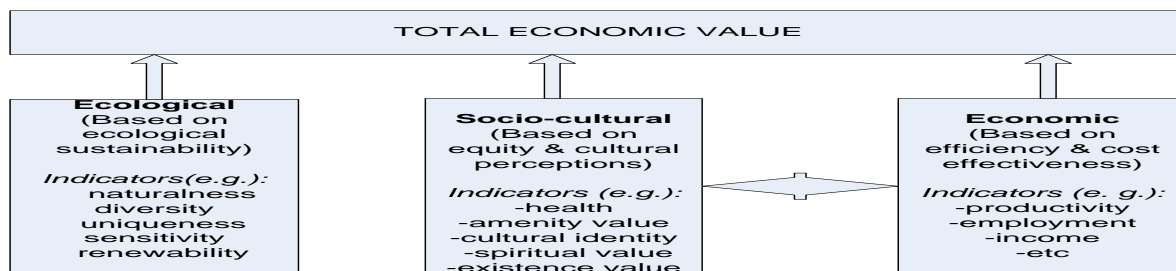
Figure 3.6: Composition of Total Economic Value
Source: De Groot, Wilson et al. (2002)

It is contended that ecological, socio-cultural and economic values have their separate roles in decision making and while they should be seen as being complementary, our emphasis in this study will be on the economic value of a wetland ecosystem. The economic value of a resource- environment system as an asset is the sum of the discounted present values of the flows of all of the services. This value may be different from its market value since many service flows are not traded in markets and therefore have no market prices(Freeman III, 1991).

The economic value of resource- environment systems, reside in the contributions that ecosystem functions and services make to human well-being. This thinking originates from the economic assumption that people have well defined preferences among several alternative goods whether marketable or non-marketable, and that people know that their preferences are substitutable. Value from the economic point of view, is usually measured in monetary terms which is indicative of the utility people derive from using a wetland ecosystem.

The use value describes the benefits derived from using an ecosystem good or service directly or indirectly. Direct use values also known as consumptive or structural use value refers to those goods or service that can be used directly (Dixon and Paxiola, 1999), while indirect use which is also known as extractive or functional use, derives its value from the services the environment provides. Option value is another type of use value which describes the value attached to maintaining the option to take advantage of something's use in the future.

Non-use values refers to the benefits derived from goods and services without using the environment in any way whether directly or indirectly. The most important variant is the existence value which is the value derived from the knowledge that something exists. Another type is the Bequest value which is the desire to pass on an environmental service to future generations.

The various types of value referred to above, fall broadly into two categories known as revealed preference methods and hypothetical methods referred to as Stated preference methods. The principal difference between them is that the later draws data from people's responses to hypothetical questions while the former draws from observations of real-world choices. Either group of methods can be measured monetarily. Monetary valuation methods may be by means of direct market valuation, indirect market valuation, or by survey- based valuation. Table 3.6 summarises the methods and their applicable constraints.

3.12.5. Using the Wetland Valuation Methods:

To situate the methods highlighted above in the context of this study, it is necessary to briefly review when to use any of the methods. Howe and Cochrane (1993) suggested that in using market prices to measure the impact of disasters on public goods/services, the valuer needs to realise the following:

i. Market prices only exist for many assets, commodities, and services in situations where market prices reflect correctly the social values of such assets;

ii. Such market prices as exist, needs to be adjusted to correctly reflect social values;

iii. Where market prices do not exist, there may be other credible methods for estimating prices which exists; and

iv. Where market prices do not exist, there may in some situations be no general credible methods for stimulating such values.

They suggest that ideally, market prices should reflect the opportunity cost and/or marginal social value of a commodity, but that subsidies or monopolistic conditions, and minimum wage legislations may thwart the operations of the market, resulting in the need to adjust the observed prices before using them. They conclude that lost services like recreation, air and water quality, or landscape view that does not have market prices should be valued with willingness to pay methods like CVM etc.

Barbier (1993a), stated that environmental valuations are required to perform three broad functions viz:-

I. Impact Assessment: This is to analyse the effects of damages inflicted on the wetland from a specific environmental impact like oil spills, proposed drainage schemes or any proposal that is likely to impact the wetland services. When an incident occurs, costs are losses arising from damage to the ecosystem and the resources and which amount to losses of net production benefits (i. e. economic benefits of production less costs) plus losses in net environmental benefits (i. e. services of the ecosystem). The value of these losses indicates the net production and environmental benefits lost as a result of the incident. The total costs of the impact in terms of damage to the wetland are the benefits foregone. In this use, the result of a TEV can help to compensate those people who suffer losses (loss of value) due to a given activity and can provide information to include probable "externalities" in the economic production process.

II. Partial Valuation or Trade-Off Analysis: This is an assessment of alternative resource allocation or project options for a given wetland in order to make informed decisions. It is used to evaluate choices involving diversion, allocation or conversion of wetland resources. It is called "partial valuation" because it may not be necessary to measure all wetland benefits but only those benefits that arise from a particular development project. Proper inclusion of all costs and benefits of a project in trade-off analysis is essential to make decisions that are socially acceptable, ecologically sustainable and economically sound.

III. Assessment of Total Economic Value (TEV): This is to determine the total contribution of wetland ecosystems to the local or national economy and human well-being, by determining the economic worth of the goods and services provided by a particular wetland. An example of this is during national income accounting.

Within the Niger Delta, and in the context of this study, the use of the valuation methods and the assessment of the TEV of wetlands will help quantify the damages to the natural resources in the wake of an oil spillage which appears to be a permanent occurrence there. It needs to be stressed that monetary valuation as being proposed, should be seen as a way of organising information to guide decisions and not an end in itself. Berkes and Folke (1998), stressed that when valuation is wielded together with financial instruments and institutional arrangements that allow individuals to capture the value of ecosystem assets, it can lead to profoundly favourable effects. Though it is believed that adopting a wetland valuation method might yield an acceptable value that can be paid as compensation to owners of wetlands with degraded natural resources when impacted negatively, it is the view of this research that it is not always easy to know whether or not a stated market price is 'right' or it requires adjustment before use in damage estimation. This reservation notwithstanding, it is necessary to value before taking any decision as some value is better than no value.

Table 3.6: Wetlands Valuation Methods and Constraints

DIRECT /INDIRECT	METHOD	DESCRIPTION	CONSTRAINTS
Direct	Market price	The exchange value of goods or services (can also be extended to other nonmarket ecosystem service benefits by observing how changes in provision affect the prices or quantities of other marketed goods).	Market imperfections and policy failures distort market prices.
Direct	Factor income or production factor method (also known as *dose-response* technique	Measures the effect of ecosystem services on loss (or gains) in earnings and/or productivity	Care needs to be taken not double count values. Cannot estimate nonuse values
Direct	Public pricing	Public investments, e. g. land purchase or monetary incentives (taxes/subsidies) for ecosystem service use or conservation.	Property rights sometimes difficult to establish; care must be taken to avoid perverse incentives.
Indirect	Avoided (damage) cost or defensive expenditure method	Considers costs and expenditures incurred in avoiding damages of reduced environmental functionality	It is assumed that the costs of avoided damage or substitutes match the original benefit. However, this match may not be accurate, which can lead to underestimates as well as overestimates.

Market Valuation	Replacement cost and substitute cost	Estimates the value of a change in nonmarket ecosystem service by calculating the cost of replacing the lost or reduced service with a manmade substitute or with restoration of the ecosystem	Tends to overestimate and cannot estimate non-use values.
Market Valuation	Mitigation or restoration cost	Cost of moderating effects of lost functions (or of their restoration)	Tends to overestimate
Market Valuation	Travel cost method	Use of travel and time expenditures as an indication of the implied value of the ecosystem service	Technique is data intensive and gets complex when trips are multipurpose. Can easily overestimate value
Market Valuation	Hedonic pricing method	Uses prices paid for associated marketed goods (in most cases this will be in the property market), as a reflection of the demand for an ecosystem service	The method only captures people's willingness to pay for perceived benefits. Very data intensive and sensitive to specification.
Market Valuation	Contingent valuation methods	The method asks people how much they would be willing to pay (or accept as compensation) for specific services through questionnaires or interviews	There are various sources of bias in the interview techniques. Also there is controversy over whether people would actually pay the amounts they state in the interviews.
Market Valuation	Benefit transfer	Uses results from other, similar area to estimate the value of a given service in the study area.	Values are site and context dependent and therefore in principle not transferable.

Source: de Groot et al (2002)

3.13. Valuation of Degraded Natural Resources:

3.13.1. Introduction:

Wilson (2002), stated that definitions in the environmental field are fuzzy at best and certainly are subject to legal and professional controversies. This means that no single definition should be seen as being completely acceptable to all but should be seen in the context of its usage. The definitions that follow is an attempt to conceptualise the relevant terms for this study.

The United Nations Convention to Combat Desertification,(1996), defines "'Land degradation' as meaning the reduction or loss of the biological or economic productivity and complexity of rain fed cropland, irrigated cropland, or range, pasture, forest and woodlands resulting from land uses or from a process or combination of processes, including processes arising from human activities and habitation patterns, such as:

(i) soil erosion caused by wind and/or water;

(ii) deterioration of the physical, chemical and biological or economic properties of soil; and

(iii) long-term loss of natural vegetation.

The University of Michigan describes it as "a process that describes human-induced phenomena which lowers the current and/or future capacity of the soil to support human life" Land degradation occurs within a natural environment, thus a degraded environment invariably includes land degradation. Environmental degradation is described as the reduction of the capacity of the environment to meet social and ecological objectives and needs by the United Nation International Strategy for Disaster Reduction, while generally; it is defined as the erosion of the quality of natural environment caused directly or indirectly by human activities. This definition is akin to that of contaminated land which the Collins English Dictionary defines as a piece of land that has been subject to the addition of harmful or undesirable substance on the land. Since the natural resources subsist on land, the process of valuing land comprehensively, entails also valuing the natural resources.

The Royal Institution of Chartered Surveyors (RICS) in its guidance note states that in its simplest definition, contaminated land is synonymous with polluted land. This means that when we talk of an oil polluted land in the Niger Delta, we are referring to contaminated

land. Part IIA of the Environmental Protection Act 1990 which came into force by way of section 57 of the Environment Act 1995 and became effective in April 2000, defines contaminated land as:

"any land which appears to the local authority in whose area it is situated to be in such a condition, by reason of substances in, or under the land, that-

   a. significant harm is being caused or there is a significant possibility of such harm being caused; or

   b. pollution of controlled waters is being, or is likely to be, caused"

The Australian National Environment Protection Council Service Corporation's National Environment Protection (Assessment of Site Contamination) Measure", 1999 defines contamination as the condition of land or water where any chemical substance or waste has been added at above background level and represents, or potentially represents, an adverse health or environmental impact. In this study, this latter definition will be adopted.

Bond (2001), states that "the valuation of property affected by land contamination is of great interest, not only to the valuation profession, but also to the stakeholders of contaminated land. These parties wish to know the magnitude and duration of the impact of contamination on property values, both before and after remediation." thus in the Niger Delta, the Oil Multinationals operating there, the Federal, State and Local Governments, the Regulating Agencies, the Landowners and the society at large are all interested in the value of any polluted land. Unfortunately, the practice of valuation in Nigeria is in its infancy and very few valuers can be said to be skilled in valuing contaminated land and there is a paucity of published papers on contaminated land valuation in the country. Most contaminated land valuation literature originated from the United States of America where Kinnard (1998), said that the 1986 enactment of the Superfund Amendment and Reauthorization Act (SARA), which amended the original Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980, triggered series of impacts and effects on the transfer and valuation of real estate known or suspected to be "contaminated".

3.13.2. US Contaminated Property Valuation Literature:

The year 1984 marked the origin of the literature on the effects of contamination on real property in USA when Campanalla (1984) paper was published. Though this initial paper was designed to help the legal community identify potential weaknesses in reports

generated for or against their clients who suffer losses from contamination of their properties, he stated that the job of a valuer is to predict how people will react to the presence of contamination and justify that prediction with some verifiable evidence. He stated that the traditional approach was to value the property as though the contaminant never existed and then revalue in its contaminated state. The difference in value is the damage suffered by the property as a result of the contamination. In reviewing the techniques of valuation that may be used including the sales comparison, income approach and cost-to-cure approach, he cautioned that the valuation of contaminated properties may become very subjective as there was hardly any comparable data available. While accepting that toxic contamination has a major impact and reduces property value, Patchin (1988), stated that seriously contaminated properties are unmarketable but properties that are mildly or suspected to be contaminated have limited marketability. He noted that the amount of loss in market value varies according to the nature and extent of the contamination. He identified the causes of market-value loss to be due to:

1. Costs of clean up;
2. Liability to the Public;
3. Stigma after Clean up.

While discussing the effect of "Stigma after Clean Up", Patchin stated that "a physical clean-up does not usually eliminate the value loss resulting from stigma….I have observed several cases in which….potential buyers remained reluctant. The reluctance has to do with all the risk and financing problems and the result is that even a cleaned up property may suffer from reduced marketability". He recommended the mortgage-equity capitalization technique as the preferred valuation method, noting that the capitalization rate was dependent on factors like:

1. The equity yield rate;
2. Mortgage terms available; and
3. Anticipated future appreciation or depreciation.

He suggested that the capitalization rate for contaminated properties can be adjusted to reflect the particular situation on hand like:

- Extent and nature of contamination-resulting in unmarketability or reduced marketability;
- Type of property involved-industrial, commercial, office, special purpose, etc.;
- Presence of assumable financing; and

- Demand for alternative uses.

Patchin painted three scenarios thus:-

Scenario 1

The risk of future liabilities after remediation is such that contamination is serious enough to render the property unmarketable, with only a "value in use".

Scenario 2

This assumes that the property has limited marketability, with a major difference in value due to the nature and extent of the contamination.

Scenario 3

The implications of contamination are such that the effect on value arises out of a change in the highest and best use of the land subject to the presence of contamination.

In determining the loss due to contamination in these scenarios, Patchin adopted the "before and after" contamination approach, increasing the capitalization rate used for the "after" valuation in the first two scenarios to reflect stigma. All the scenarios require a high degree of accuracy in remedial cost estimates in order to inform the valuation process, but these costs are hardly available in practice. He cautioned about the virtual lack of market sales transactions data for contaminated properties, noting that the results are very dependent on individual circumstances and suggested that more precise valuation techniques would be developed as more market data become available.

In discussing the certainty of remediation cost estimates, Wilson (1996) introduced the need to use probability estimates in determining the range of probable cost of remediation. He stated that buyers had a tendency of normally deducting twice the estimate of "most likely" remedial cost due to the historically proven uncertainty of these estimates, as they attempt to cover unforeseen increases in the estimated costs. Mundy (1992a) described the total loss in value resulting from contamination as often being more than the "cost to cure", since property that is affected by contamination may suffer from diminution in value from either real risks and/or perceived risks. He defined perceived risk as the risk seen by the public in the market place and stated that for income producing properties, the effect of contamination is twofold. The first is the income effect, which is the difference between the property values as if uncontaminated and the property value as if contaminated and is related to lost income. The damage is estimated by discounting the present value of lost income over the duration of the effect, at a market rate of interest in the uncontaminated condition, and at a risk rate in the contaminated condition. The second is the marketability effect which is the inability to market the

property because of the perceived risks attached to it by the market. The damage here is related to lost opportunity and this cost is measured by the present value of the diminished value over the duration of the effect at market rate. He cautioned that care must be taken to avoid double counting while quantifying these effects and that the analyst should quantify them independently. Chalmers and Roehr (1993) cautioned that using a method of valuation of contaminated properties which measures the difference between value of the property as uncontaminated and the value as contaminated, is only useful when the various costs can be predicted accurately, in terms of the timing and cost of remediation, indemnification required and increased financing costs associated with the contaminated property. They identified the reasons for loss in value after contamination as resulting from direct costs and stigma. Direct costs was defined as any effect of the contamination on direct cash flow stemming from lowered income flows, remediation costs and insurance costs, while stigma refers to impacts on value stemming from the increased risk associated with the property and the effect of this on the marketability and financeability. They concluded that the valuation of contaminated properties poses a challenge to scientific and engineering knowledge, economic analysis, appraisal methods, and to the very definition of value. They suggested a cash flow method of valuation.

Bell (1998) stated that determining the diminution in property value caused by a detrimental condition like pollution or any other form of contamination requires the application of specialised methods, procedures, and formulas and proceeded to discuss theory and technique, while noting that special care should be taken in the review of remediation cost as original cost estimates are frequently exceeded. While suggesting the Detrimental Condition Model as a technique of valuation, gave six elements which must be considered in every analysis. The six elements are:-

    A. Unimpaired Value;

    B. Detrimental Condition Occurs or Discovered;

    C. Assessment Stage, noting (Cost and Responsibility, Use, Uncertainty Factor i.e. Risk);

    D. Repair Stage, noting (Cost and Responsibility, Use, Project Incentive i.e. Risk);

    E. Ongoing Stage (Cost and Responsibility, Use);

    F. Market Resistance (Risk).

According to Bell, the cost may require the addition of a contingency factor, "to reflect a complete and reasonable cost estimate, so that the real estate market is reasonably assured

that all reasonable remediation costs are accounted for in the estimates provided". He suggested that this contingency factor relates to the "hard costs of remediation and should not be confused with intangible losses, such as onus or stigma". Bell's view on stigma differed from the opinion of others. He was of the view that remedial cost overruns should not be added as part of stigma calculation, unlike Wilson and Mundy's calculation of stigma which included remedial cost overruns in the definition of perceived risk. Patchin accounted for stigma by adjusting the capitalization rate without specifically providing for cost overruns.

3.13.3. The United Kingdom Approaches:

The valuation of contaminated properties and the identification and measurement of stigma majorly started appearing in the United Kingdom literature as from 1995 with the works of Lizieri et al. (1996), Dixon (1995), Richards (1996), Syms (1996) and Kennedy (1997). Prior to this, some authors had reviewed the impact of contamination on properties. Sheard (1993) made the point that the value of a contaminated site after clean-up is usually less than that of an equivalent virgin site, as the site remains "acceptably contaminated" in addition to uncertainty and risk. He advocated the use of Open Market Valuation for existing use, stressing that environmental factors only become an issue during a change of tenancy. He argued that a higher developer's profit should be provided for after deducting the costs of remediation to an appropriate standard to account for stigma and risk but did not give an indication of what the rate should be. Supporting Sheard, Lockwood (1994), proposed the use of Open Market Value adjusted for possible future costs relating to environmental damage, as a method for valuing contaminated sites. Starting with the Open Market Valuation of a hypothetical or actual comparable site with no environmental risk, he suggested that the open market value should reflect consensus view, given current information, of the future cash flows from the site, including expectations about environmental cost. The problem with this approach is the difficulty of identifying appropriate comparables that are uncontaminated.

Dance (1993) considered the effect of clean-up costs and the blighting effects of a site being placed on a contamination register and confirmed that the blighting effects lowers property prices, noting that stigma effects reduce value while the initial yield will be higher to reflect the risk of changing legislation, possible owner liabilities and potential lack of saleability in the future. He recommended a valuation based on the available facts but heavily hedged with caveats. Adopting a more confident and optimistic view of the

property market, Gilmore (1992)stated, *"The property industry can draw on its experience in dealing with the "unknown" in the handling of this potential threat. When the threat of high alumina cement was initially unearthed, the property industry reacted in much the same way as it has done in relation to the environmental issue. However, after the initial panic, the industry priced this threat, and that of deleterious materials in general, into property prices and dealing with those threats has now become a normal part of market practice"*. This is rather a very simplistic view as every contaminated land is unique, just as no two contaminants will possess the same effects. To assume an efficient market is to believe that market transactions are usually kept in the public domain rather than the reality of the privatised nature of such transactions.

Lizieri et al (1996) at p16, in considering the relationship between valuation methodology and environmental legislation in a report for the RICS Education Trust stated that:-

"The standard method of valuation in the United Kingdom is still based on the use of an all risks yield, derived from analysis of market comparables. Despite criticisms of the ARY methodology, it remains the technique most commonly used in valuation, both for determining likely selling price and for portfolio performance and lending security purposes". They conceded that the valuation and appraisal of land and buildings with potential environmental hazard is problematic and that traditional all risk yield valuation methodologies, rely on market evidence and comparables which are hard to obtain due to the uniqueness and specificity of environmental problems and the thin size of the market. They suggested use of more explicit valuation methods, whether based on yield decomposition, Discounted Cash Flow (DCF) or Probabilistic frameworks as these will permit making all assumptions visible and allowing for a sensitivity analysis. They caution though that the quantification of variables in these models is extremely difficult. Dixon (1995), Richards (1996), and Syms (1996) all agreed that experience and thought in the US provides the foundation for contaminated properties valuation in the UK.

Dixon, while questioning the use of "Value as If Clean" (i.e. Unimpaired Value) as the starting point, agrees that the Remediation Costs should be deducted from the Unimpaired Value. He did not say whether what should be deducted should be the total remediation cost or the present value of the remediation cost. Richards agreed that the most appropriate valuation method was found to be a "Cost to Correct" method, whereby the costs of remediation are deducted from an unimpaired value figure. He also found that the DCF method was the most appropriate method to use in determining the worth of a contaminated property. He further agreed with Patchin that it is also essential to consider

the use of "stigma" within valuations and the calculations of worth, while accepting Patchin's definition of Stigma as the value impact of environmentally-related uncertainty. Richard cautioned that it must be realised that the adjustment for stigma was highly subjective and should be conducted with extreme caution. He stated that while the Open Market Value dominates as the most appropriate valuation basis, the Existing Use Value (EUV) may produce a more realistic measure of value or worth in the case of contaminated industrial properties, and considered it to be an appropriate basis for valuing properties where the contamination was not so severe as to prevent continuation of the existing use, whereas the Alternative Use Valuation method would imply a need for some remediation. He concluded that:-

1. Valuers need some form of environmental education to be able to identify when a property has suffered a diminution in value due to contamination and when they need expert advice in determining the impact of contamination.

2. The "Cost to Correct" approach is the best method to provide "best market practice".

3. The estimation of Stigma is inherently subjective.

4. There is a great need for improvement in providing guidance to valuers in the valuation of contaminated properties.

5. There is the need for a market-wide database of contaminated property transactions to reduce the subjectivity of adjustments made in respect of Stigma.

Kennedy and Syms while agreeing that there is need to use market based methods, also cautioned that a market-wide database is hardly available but would be extremely useful where they exist. While accepting the need to adjust the All Risks Yield to reflect environmental stigma, Syms criticized the adjustment procedure as being excessively subjective and rather suggested quantifying a capital value adjustment with market derived information. His proposed model would identify factors influencing the perceptions of financial risks held by potential purchasers on a scale, which would assist in quantifying environmental stigma. This follows the procedures suggested by Patchin and Mundy. The approach adopted by Syms was first to prepare an unimpaired valuation of the land only, disregarding any buildings, fixed plants or other structures on the site. The site valuation may be done using either direct comparison with industrial land in the area or by deducting the depreciated replacement cost of the buildings from the total unimpaired asset value. From the uncontaminated land value, a deduction of the "costs to correct" is made. The costs include:

a. clean-up of on-site contamination;

b. effective contamination control and management measures;

c. re-design of production facilities;

d. penalties and civil liabilities for non-compliance;

e. indemnity insurance for the future;

f. the avoidance of migration of contamination to adjacent sites;

g. the control of migration from other sites; and

h. the regular monitoring of the site.

Most of the published authors on the valuation of contaminated properties in the UK agree that there is need for proper methodology and procedure, though the best-practice valuation framework adopted appears to be similar to the United States' practice.

Within the Niger Delta context, there is a dearth of literature on the subject of valuation of contaminated/polluted properties, despite the widespread pollution from oil spillages. Attempts to value any polluted land have adopted methods prescribed for the compulsory acquisition of land in Nigeria, see Ogedengbe (2007a) and Otegbulu (2009).

Valuation Methods Used for Contaminated Properties:

Jackson (2001) posited that the literature available on the valuation concepts and methods for valuing the effects of environmental contamination on real estate relates to income-producing, commercial and industrial real estate and that only very few empirical studies of contaminated real estate exist. The available literature has focused on how existing appraisal methods can be adapted to estimate the impact of contamination on value. This scenario is worse in the Niger Delta where most of the contaminated land subsist in rural communities where there is the near absence of a property market and thus lies almost outside the purview of professional valuers' practice.(Jackson, 2003) asserted that most assignments involving contaminated properties are for litigation and suggests that any valuation method that is to be used, should be one that has gained general acceptance in the appraisal profession or the section of the profession that specialises in contaminated property valuation. In view of the nature of the property market in the region and since few valuers handle contaminated properties in the Niger Delta; it is difficult to adopt their valuation methods for general applicability. Efforts will be made to adopt from the available methods in use and modify them for application to the region. Jackson lists the valuation methods accepted professionally for valuing contaminated properties as including the following:

- Analysis of environmental case studies;

- Paired sales analysis of potentially impacted properties;
- Use of market interviews to collect data and information used in other approaches or to support and supplement the results of other analyses
- Multiple regression analysis of potentially impacted neighbourhood areas or properties in proximity to a contaminated source;
- Adjustment of income and yield capitalisation rates to reflect environmental risk premiums in an income capitalisation analysis.

Earlier on, Wilson (1996) had suggested the use of;

  i.   The Engineering Impaired Value Model. This model is simply illustrated as:

Impaired Value

EQUALS Unimpaired Value

Less Most likely cost of remediation (in accordance with relevant requirements)

Less Most likely cost of restriction on use

Less Most likely cost of incremental cost of financing

Plus Most likely Present Value of any recoveries from third parties

Plus/Minus Influence of Market Factors.

This is a cost based method and generally entails studying the cost profile which may include the remediation engineering cost, tenant relocation, lost rents, demolition, repair, clean-up, new tenant improvement, buyouts, leasing commission, carrying costs, etc.

Bell (1998) groups all the methods into the three approaches to value and summarises them as:

  1.   Cost approach which entails:

Unimpaired Value

LESS Assessment State Value Effects (including Costs and Responsibility, Use, Risk i.e. Uncertainty factor)

LESS Repair State Value Effects (including Costs and Responsibility, Use, and Risk i.e. Project Incentive)

LESS Ongoing Stage Value Effects (including Cost and Responsibility, Use, and Risk i.e. Market Resistance)

EQUALS Impaired Value.

  2.   Sales Comparison Approach where sales data from the impacted area is compared with sales from an unimpacted area to ascertain any diminution in value resulting from the contamination.

3. Income Capitalisation Approach where the Net Operating Income from the contaminated property is discounted with a discount rate adjusted for the risk of contamination.

3.13.4. Analysis of Environmental Case Studies;

This is a technique used where there is difficulty in identifying sales of similar properties in a similar environmental condition and in the same market condition as the subject property. It entails analysing comparable impaired properties from outside the subject property's market area but with similar environmental condition as the subject property. Some of the characteristics which may be considered are listed in the Appraisal Standard's Board Advisory Opinion AO-9 as follows:

1. whether the contamination discharge was accidental or permitted;
2. the status of the property with reference to regulatory requirements;
3. the remediation lifecycle stage (before, during, or after clean-up) of the property as of the date of value;
4. the contamination constituent (petroleum hydrocarbons, chlorinated solvents, etc.);
5. the contamination conveyance (air, groundwater, soil, etc.)
6. whether the property is a source, non-source, adjacent, or proximate site;
7. the cost and timing of any site remediation plans;
8. the liabilities and potential liabilities for site clean-up;
9. the potential limitations on the use of the property due to the contamination and its remediation; and
10. the potential or off-site impacts due to contaminant migration (for source sites).

On assembling this information, the selected case study properties are then compared with similar but uncontaminated comparables in their market area to determine any effects attributable to the environmental condition of the case study properties. This enables the appraiser to derive contamination-related impacts for each case study with which he compares to the subject property. Efforts must be made to note differences in general market conditions, property type, and date of sale, to ensure comparability of case study properties with the subject property.

3.13.4.1. Paired Sales Analysis;

This is an appraisal technique used to find the value of a particular feature within a property such as a two-car garage or other difference. The appraiser finds two recently

sold properties that are virtually identical except that one has say a two-car garage and the other does not. The two properties are the paired sales. Where the difference in feature is only the two-car garage, then the difference in value can be attributed to the garage. Any other feature can be assigned a value in this way. In valuing contaminated properties, sales of properties in the impacted area are paired with sales of otherwise similar properties located outside the impacted area in other to determine the effects, of any contamination on properties within the impacted area. When using the comparable sales method, the valuer can assign values to various features by comparing the subject property with the sold one in this way but the procedure is dependent on identifying impaired sales with the same environmental condition as the subject, as well as identifying unimpaired comparables that are similar to the impaired sales except for the environmental condition at the time of sale. The Appraisal Institute (2001) cautions that while the paired sales analysis is a theoretically sound method and as helpful and persuasive even when limited data are available, care must be taken in using quantitative adjustments in comparison so as not to exceed the available data. Other techniques are:

- Market Interviews;

These are not methods or techniques for valuation, but are useful for collecting and understanding the data and relevant information necessary to apply the other methods and techniques. In conducting market interviews, care must be taken to avoid bias by paying attention to:

- the selection of market participants to be interviewed;
- development of unbiased information about the subject property and its environmental condition;
- construction of a structured questionnaire and interview protocol that can be replicated.

- Multiple Regression Analysis;

This is a statistical technique that can be used to analyse the impact of environmental contamination on the sale prices of properties in an impacted area. It is the process of calculating a regression coefficient of multiple determination and regression equation using two or more independent variables and one dependent variable that impact the value of a property. In using this technique, Jackson (2003) suggested that we must consider three questions: (1) whether or not the contamination had a measurable effect on price and value; (2) if there was an effect, was it temporary, or did it persist subsequent to remediation of the site or withdrawal of the disamenities; and (3) the existence of any

observed intervening conditions, such as a strong or weak market, that may have influenced the effects of the contamination on property prices and values.

Income Capitalisation;

This may be in the form of direct capitalisation or a discounted cash flow analysis. When direct capitalisation is done, the method entails discounting the reduced rent occasioned by the contamination with a discount rate adjusted for the risk of contamination. The problem here is the quantification of the adjustment factor to reflect the market perception of the risk of the contamination referred to as stigma suffered by the property. In the discounted cash flow analysis, the net present value of the income stream reflecting the affected property's various costs and fluctuating revenues. It is also possible to adjust the discount rate where there is a market evidence supporting such adjustment.

3.13.5. Valuation of Contaminated Environment in the Niger Delta

Jackson (2001) posited that the literature available on the valuation concepts and methods for valuing the effects of environmental contamination on real estate relates to income-producing, commercial and industrial real estate and that only very few empirical studies of contaminated real estate exist. The available literature has focused on how existing appraisal methods can be adapted to estimate the impact of contamination on value. Within the Niger Delta context, there is a dearth of literature on the subject of valuation of contaminated/polluted properties, despite the widespread pollution from oil spillages. Attempts to value any polluted land have adopted methods prescribed for the compulsory acquisition of land in Nigeria, see Ogedengbe (2007) and Otegbulu (2009).

3.14. Problem Solving Theories

3.14.1. Introduction:

Problems generally consist of givens, goals and operations. Simon (1972, cited by Hardin, 2003), defined 'Givens' as the facts or pieces of information presented to describe the problem. 'Goal' is the desired end state of the problem. 'Operations' are the actions to be performed in reaching the desired goal. Hardin (2003) opined problem-solving knowledge is either declarative knowledge or procedural knowledge. Declarative knowledge refers to knowledge of facts, theories, events, and objects, while procedural knowledge refers to knowing how to do things like carpentry or masonry works. Both types of knowledge are said to interact in different ways during problem solving.

The dominant problem solving theories, fall within the domain of behaviourism, cognitive psychology, and information processing. Hardin (2003) stated that behaviourists view problem solving as a process that develops through positive and negative reinforcement mechanisms. Cognitive psychologists view problem solving as a process that includes introspection, observation, and the development of heuristics. The information-processing view of problem solving is based on general problem solving skills and artificial intelligence.

3.14.2. Behaviourists

Within the behavioural theories, it is believed that problem-solving methodologies may be either by trial and error or by a response hierarchy. The trial and error method involves attempting to solve a problem by various means until a solution is found. The selection of comparables by valuers exhibits this type of problem–solving behaviour as different properties are examined until one is found that appears to be similar to the subject property being valued. The response hierarchy method is attributed to Hull's response hierarchy which involves applying learned responses to a problem in a hierarchical manner. It is believed that a problem produces several responses according to the respondents' habit strength, which will be applied one at a time until the problem is solved or the respondents run out of responses.

3.14.3. Cognitive Psychology

Cognitive psychology studies the process of acquiring knowledge and understanding through thought, experience and the senses. Two notable models here, are those developed by Wallas and Polya cited by Hardin (2003). Wallas proposed a four-stage problem solving model which includes (1) preparation—defining the problem and gathering information relevant to it; (2) incubation—thinking about the problem at a subconscious level; (3) inspiration—having a sudden insight into the solution of the problem; and (4) verification— checking to be certain that the solution was correct. Similarly, Polya described the following four steps in the problem-solving process: (1) understand the problem, (2) devise a plan, (3) carryout the plan, and (4) look backward. This general problem solving strategies, Polya said was the key to problem-solving expertise and intellectual performance and referred to them as heuristics (rule of thumb). Heuristic methods can be applied to a problem in any content domain; thus they are considered to be general problem-solving skills. People often have to make decisions in the face of uncertainty, with sketchy information about the situation, on the basis of

suggestive but inconclusive evidence. The reasoning processes used to resolve the uncertainty are often called judgment heuristics. One form of judgment heuristic is similarity judgment, where an instance is evaluated based on prior knowledge of a similar instance. A similar type of judgment is representativeness, where an assumption is made based on the belief that the characteristics of the individual are representative of the group (Hardin, 2003).

3.14.4. Information Processing

This theory emphasizes the role of factors such as working memory capacity, organization of long-term memory, and cognitive retrieval of relevant information. Within this set of theory is artificial intelligence (AI), which is the study and development of computer programmes to solve problems. The main thrust is Newell's four principles of of (1) A few gross characteristics of the problem-solving process are invariant over the task and the problem solver, (2) the characteristics of the problem are sufficient to determine the problem space, (3) the structure of the task environment determines the possible structure of the problem space, and (4) the structure of the problem space determines the possible programs (methods) that can be used for problem solving. Hardin (2003) opined the ability to solve problems successfully depended on certain factors related to the human information-processing system and that six characteristics of expert performance have become accepted to include:

- Experts have the knowledge base required to solve a problem, and this knowledge is assembled in a way that does not tax working memory.

- Experts are faster and more accurate than novices at solving problems within their domain since they have developed automated skills applicable to the problem, and they have an organised database from which to retrieve the solution.

- Experts have superior short-and long-term memory, rather than volume.

- Experts see and represent data at a more principled level than novices.

- Experts spend more time analysing and evaluating a problem quantitatively before beginning to solve the problem.

- Experts have strong self-monitoring skills and are more aware when errors are made and when they require checking their solutions.

Tallman *et al* (1993) defined a problem as a situation in which there is a barrier that interferes with an actor's attaining a desired goal and in which it is uncertain whether the barrier can be overcome. A barrier they referred to as any psychological, interpersonal,

social, economic, or physical condition that interferes with actors' opportunities for goal attainment, and uncertainty as the availability of courses of action entailing some risk that the desired outcome will not be attained. A problem (or problematic situation) is any life situation or task (present or anticipated) that demands a response for adaptive functioning but no effective response is immediately apparent or available to the person or people confronted with the situation because of the presence of one or more obstacles (D'Zurilla and Nezu, 1982). Problem solving is defined as a routine mental and/or motor activity undertaken under conditions of uncertainty and oriented toward overcoming an impediment to goal attainment by circumventing, eliminating, or removing a barrier and/or restoring previously established routes to goal attainment (Tallman et al., 1993). Generally, problem solving activities may be seen as an effort to avoid error-prone alternatives, oriented toward changing or eliminating a problematic state of affairs and it is a behavioural process involving several stages of activities. To accommodate these stages, Tallman *et al* (1993) further defined the problem solving process as a four-stage process involving: perceiving (awareness of) the situation as problematic; searching for and processing information relevant to selecting an effective problem-solving activity; engaging in a problem-solving activity; and evaluating the outcome of the activity. Each of these stages is considered to be precursor to the next stage and requires a decision whether to go on to the next stage or return to the previous stage or abort the process.

In their view, D'zurilla *et al* (1982) defined problem solving as the self-directed cognitive-behavioural process by which an individual, couple, or group attempts to identify or discover effective solutions for specific problem encountered in everyday living. They opined this cognitive-behavioural process (a) makes available a variety of potentially effective solutions for a particular problem and (b) increases the probability of selecting the most effective solution from among the various alternatives. In the context of contamination, the alternatives may include providing palliative reliefs to the affected land occupiers, decontaminating the land, payment of compensation for damages suffered, restoration of the ecosystem and preventive measures against further contamination. The degree, to which each of these alternatives is pursued, will depend on each party's definition of problem solution. A solution is a situation-specific coping response or response pattern (cognitive or behavioural) that is the product or outcome of the problem solving process when it is applied to a specific problematic situation (D'zurilla *et al*, 1982). An effective solution is one that achieves the problem-solving

goal (i.e., changing the situation for the better or reducing the emotional distress that it produces), while at the same time maximizing other positive consequences and minimizing negative consequences thus this will entail restoring the affected land occupiers to as near a position as they were prior to the contamination.

An interpersonal problem is a special kind of real-life problem in which the obstacle is a conflict in the behavioural demands or expectations of two or more people in a relationship (Jacobson and Margolin, 1979 cited by D'zurilla *et al*, 1982). In this context, interpersonal problem solving may be described as a cognitive interpersonal process aimed at identifying or discovering a resolution to the conflict that is acceptable or satisfactory to all parties involved. Hence, according to this view, interpersonal problem solving is a "win-win" approach to resolving conflicts or disputes rather than a "win-lose" approach. In a contaminated land situation, the notion of a win-win solution is rarely feasible as the land will suffer the effect of the contamination so many years after it might have been certified to have been remediated by the polluter. For an interpersonal problem, an effective solution is one that resolves the conflict or dispute by providing an outcome that is acceptable or satisfactory to all parties involved. This outcome may involve a consensus, compromise, or negotiated agreement that accommodates the interests and well-being of all concerned parties. A practical problem solving process adopted for this research is The Problem Solving Process illustrated by Tallman et al (1993) and shown in figure 3.7 below. The problem in this illustration is the occurrence of a contaminating incident like an oil spill, which when acknowledged by the polluter (IOC), a decision will be taken whether to clean the spill or not. Where the spill is accidental, statutory requirements will demand that steps be taken to remediate the polluted site. The search for possible remediating solutions will constitute the alternative actions that will be considered and the possible alternative that may be selected. The problem solving action will be the actual cleaning and decontaminating efforts that are made to restore the site to its pre-contaminated state, while evaluation of problem solving effort will be an assessment of the decontamination efforts to ascertain their success or failure. Where decontamination has been successful, the land will revert to the owners but where it fails, then the decision will be taken whether to continue or not.
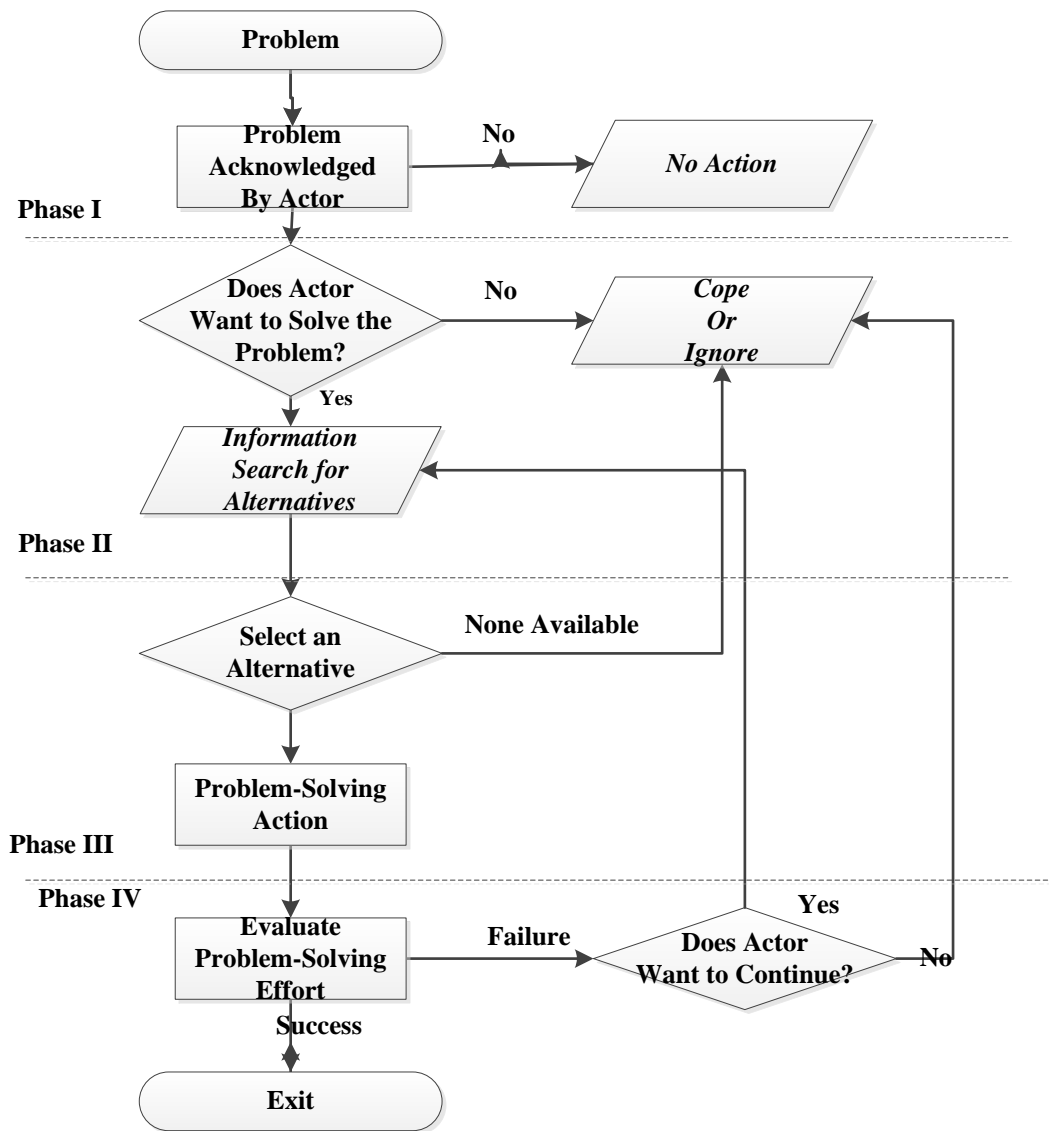
Figure 3.7: The Problem Solving Process

Source: Tallman et al (1993)

3.15. Stakeholder Theory

3.15.1. Stakeholder Theory and the Valuation of Contaminated Wetlands:

The assessment of damages due to contamination usually occurs when an operator of an oil mining lease causes or suffers some accident that results in crude oil being spilled on the environment, on land owned and managed by third parties. These operators are the International Oil Companies (IOCs) duly licenced by the Federal Government to prospect for and develop oil wells to produce crude oil which the Nigerian economy very much depends on. Since they are authorised by government to operate and the land is owned and developed by land owners, the IOCs usually appoint valuers to advise them on the

value of damages suffered by the land owners, which means that there are different parties involved as stakeholders in the assessment of damages due to contamination. How these parties relate and who they are, can be explained by the Stakeholders Theory, hence there is need to review the theory hereafter.

Though a Stakeholder has been variously defined, for example Alkhafaji (1989, p.36) cited by Mitchell et al. (1997) defined stakeholders as "groups to whom the corporation is responsible" and Thompson et al (1991, p. 209) also cited by Mitchell et al (1997) defined stakeholders as groups "in relationship with an organization", Freeman (1984, p. 46) cited by Mitchell et al (1997), defined stakeholder as any group or individual who can affect or is affected by the achievement of the organisation's objectives, the definition by Mitchell et al (1997) that a stakeholder is a person or persons, groups, neighbourhoods, organisations, institutions, societies, and even the natural environment that is affected or may be affected by a firm's decision and actions. Some of definitions like that of Thompson et al, adopt a narrow view of a stakeholder while others adopt a wide view like that of Mitchell et al. In the oil operation scenario, possible stakeholders will include the government; regulatory agencies of government; IOCs; Contracting Firms to the IOCs; Human Rights and Advocacy groups; Professional Valuers; oil Bearing and Host Communities to the IOCs where their operations are conducted; Local Governments hosting the operations; Trade Unions; Tanker Drivers; Professional Lawyers; Federal and State High Courts; Tertiary Institutions and any other person or groups that may be affected by the oil operations. It is the nature of the far reaching relationship of the IOCs and those connected with its operations that have led to the adoption of Mitchell et al's definition for this study. How any of these groups or person is identified as a Stakeholder, is explained by a Stakeholder Theory. Stakeholder Theory according to Mitchell et al (1997) is the articulation in a systematic way of which groups are stakeholders deserving or requiring management attention and which ones are not. Donaldson and Preston (1995) is cited by Reynolds et al. (2006) as emphasising that ''stakeholder theory is managerial in the broad sense of that term'' in that it portrays managers as individuals who pay ''simultaneous attention to the legitimate interests of all appropriate stakeholders, both in the establishment of organizational structures and general policies and in case-by-case decision making'' In its basic form, the stakeholder theory explains how important it is for any business to succeed, by creating value for its customers, suppliers, employees, communities, and financiers, shareholders, banks and other people with money. It stresses the need not to examine any of the entities to a business in isolation as their interests go

together and are enhanced by their joint consideration and the need to create value by a firm for its shareholders. A robust theory should state the characteristics of a qualifying stakeholder and their respective influences. Stakeholders need to be classified to be able to study their influences. Savage et al (1991) cited by Mitchell et al (1997)considered only two attributes namely (1) a claim; and (2) the ability to influence a firm; as being necessary to identify stakeholders whereas Mitchell et al (1997) proposed that classes of stakeholders can be identified by their possession or attributed possession of one, two, or all three of the following attributes: (1) the stakeholder's power to influence the firm, (2) the legitimacy of the stakeholder's relationship with the firm, and (3) the urgency of the stakeholder's claim on the firm.

Power is defined as the ability to bring about a desired outcome by those who possess it (Mitchell et al, 1997). According to Mitchell et al, this attribute can only be exercised if the possessor has access to coercive, utilitarian, or normative means to impose his will in the relationship. Legitimacy is defined by Churchman (1995) cited by Mitchell et al (1997) as a generalised perception or assumption that the actions of an entity are desirable, proper, or appropriate within some socially constructed system of norms, values, beliefs and definitions. Generally, this refers to socially accepted and expected structures or behaviours by a society like the expectation that the Police will provide law and order in a community to prevent lawlessness. Urgency is defined by the Merriam-Webster Dictionary as "needing immediate attention" and exists when a relationship is time-sensitive and critical or important to the stakeholder. In interpreting these attributes, Mitchell et al adds that certain features must be added thus: (1) Stakeholder attributes are variable, and not fixed; (2) Stakeholder attributes are socially constructed, not objective, reality; and (3) Consciousness and wilful exercise may or may not be present. Thus power, legitimacy and urgency are all variable, socially constructed and may not be known to the possessor.

This study agrees with Mitchell et al (1997) that these attributes need not be considered singly but must be taken together to assess their influences. It is worth noting that a consideration of these attributes together will capture some stakeholders who may not be apparent but may become critical when the need arises, for example the owner of an adjoining land to a pipeline right of way may have no relationship with the IOC transporting crude oil through the pipeline until the pipe ruptures and spills crude oil on all the surrounding lands. When nothing has happened, the land owner will be a latent stakeholder, but after the spill, he will become an active stakeholder.

3.15.2. Classification of Stakeholders:

This study adopts the three broad groups divided into a seven-class classification by Mitchell et al (1997). These are (1) Latent Stakeholders characterised by the possession of only one attribute; (2) Expectant Stakeholders who possess two of the identifying attributes; and (3) Definitive Stakeholders who possess the complete three attributes. Each group is further subdivided as shown in Figure 1 below.

(1) Latent Stakeholders: these groups of stakeholders possess only one attribute and are likely to be neglected by managers who may not even recognise their existence. In this group are:

(i)   Dormant stakeholders (shown as No. 1) whose only attribute is the possession of power to impose their will but no legitimate relationship with the firm and no urgent claim. In the context of this study, an example will be the security agencies.
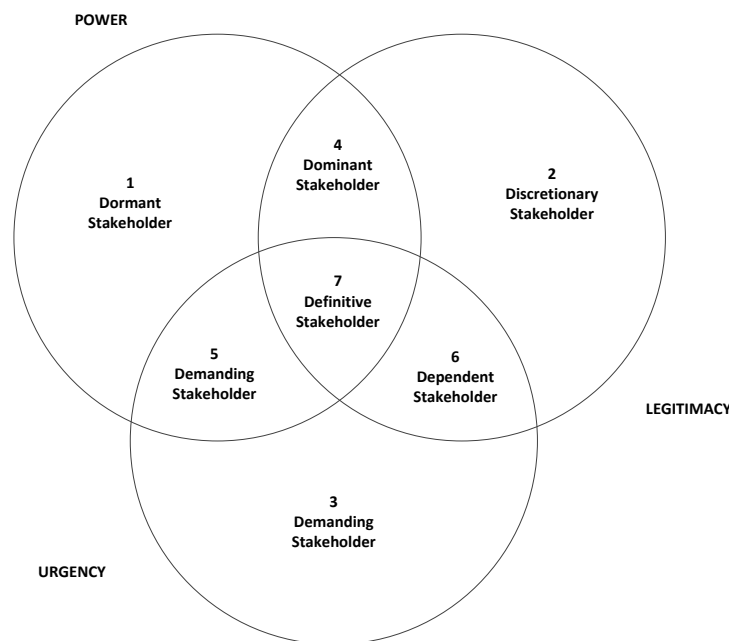
Figure 1: Classification of Stakeholder

Source: Adapted from Mitchell et al (1997)

(ii)   Discretionary stakeholders (shown as No. 2) possess the legitimacy attribute but have no power to influence the firm and have no urgent claim like the oil bearing communities who receive concessionary developmental projects and occasional presents from the IOCs. These stakeholders are only considered at the discretion of the firm.

(iii)   Demanding stakeholders (shown as No. 3) possess only urgency and not power or legitimacy but constantly disturb the firm asking for attention

like the various community groups who ask for projects from the IOCs on the ground that they are "host" communities on whose land the oil exploitation occurs.

(2) Expectant Stakeholders: These are characterised by the possession of two identifying attributes and thus expect to be considered by the firm but may not be able to enforce their consideration. The managers of any firm do recognise their presence and always tries to accommodate them. Their typology includes:

(i)   Dominant stakeholders (shown as No. 4) possess both power and legitimacy but no urgency, but because they are both legitimate and powerful, they exert a lot of influence and between them, they could alter situations and they always expect and receive the manger's attention. In the context of contaminated wetlands valuation, the dominant stakeholders will be the Nigerian National Petroleum Corporation (NNPC) that oversees the Government interests in the IOCs and approve prospective projective to be undertaken by the IOCs. The NNPC has power conferred by the government and by virtue of its joint-venture partnership with the IOCs, has legitimacy in their operations.

(ii)   Dependent stakeholders (shown as No. 6) possess legitimacy and urgency but lack power to enforce their will, as they depend on other stakeholders or the firm for the power necessary to effect their will. In a contaminated wetland like the Exxon Valdez oil spill, the business groups or individuals who suffered losses due to the spill, possessed urgency and legitimacy but did not have power to enforce their will to be reinstated to their prior position before the spill, hence they had to rely on Lawyers, Courts, Juries etc. and the Company's managers to enforce their compensation.

(iii)   Dangerous stakeholders (shown as No. 5) applies to those stakeholders who hold power and urgency but no legitimacy and they tend to be violent and confrontational like the Niger Delta militants who took up arms to enforce the consideration of the Niger Delta in the oil and gas developments in Nigeria. Also included are the various host communities that block the operational base of the IOCs to attract considerations for community public-relational projects in the Niger Delta. Any neglect of this group of stakeholders results in economic losses for the IOC or firm.

(iv)   Definitive stakeholders (shown as No. 7) are those stakeholders who possess all the three attributes of power, legitimacy and urgency like a valuer who is engaged to advise on the value lost as a result of an oil spill has power conferred on him by law to place value of any description on any property in Nigeria; he is qualified by training to practice as a valuer thus giving him legitimacy; and he has urgency by his need for the

payment of professional valuer's fees will necessitate delivering the professional valuation opinion promptly and accurately to ensure he satisfies his clients.

The relationship between the parties involved in any valuation assignment especially when a contaminated wetland is involved can be examined with the stakeholder theory to understand who is critical to making the process of environmental management succeed. This is very important when it is realised that in the broad view of stakeholder theorists, no particular stakeholder assumes a static position but all exist in a dynamic state where each struggles to acquire a more influential status, for instance when a dormant stakeholder acquires legitimacy and urgency or when a dominant stakeholder acquires urgency.

3.16. Development of Conceptual Framework:

Hicks (1991), dissects frameworks into practical, theoretical and conceptual types. He further defines a Practical framework as a research approach that focuses on problems of real concern to practitioners by identifying successful practitioners in a discipline and applying theoretical knowledge to identify the distinctive features of the approach used by these practitioners to solve problems. In doing this, it utilises what works in practice, adopting the conventional wisdom of the discipline's stakeholders, but does not rely on a particular theory. A Theoretical framework is a structure that guides research by relying on a formal theory. This implies the construction of a framework, using an established, coherent explanation of certain phenomenon like conflict etc. the third type is the conceptual framework which can be said to be an argument including different viewpoints (concepts) to proffer a solution to a problem. It is based on the belief that the concepts chosen for investigation or interpretation and any anticipated relationships between them will be appropriate and useful to solve the research problem in focus and ends with a series of reasons for adopting any particular viewpoint (concept). According to Crossan (2003) a conceptual framework explains, either in graphic or narrative form, the main things to be studied, the key factors, constructs or variables and the presumed relationships among them. They stated that they may be rudimentary or elaborate, theory-driven or commonsensical, descriptive or casual. A conceptual framework combines both the theoretical and practical concepts and is the preferred type for the subject study in keeping with Jabareen (2009) who defines it as a network, or 'a plane', of interlinked concepts that together provide a comprehensive understanding of a phenomenon or phenomena, and gives seven phases for the development. These include- 1. Mapping the selected data sources, 2) extensive reading and categorising of selected data, (3)

identifying and naming concepts, (4) deconstructing and categorising the concepts, (5) integrating concepts, (6) synthesis, resynthesizes, and making it all make sense, and (7) validating the conceptual framework.

3.16.1. Framework Development:

While Miles and Huberman (1994) defined a conceptual framework as a process laying out the key factors, constructs, or variables, and presumes a relationship among them, Jabareen (2009) defines it as a network, or 'a plane', of interlinked concepts that together provide a comprehensive understanding of a phenomenon or phenomena, and gives seven phases for the development. These include- 1. Mapping the selected data sources, 2) extensive reading and categorising of selected data, (3) identifying and naming concepts, (4) deconstructing and categorising the concepts, (5) integrating concepts, (6) synthesis, resynthesis, and making it all make sense, and (7) validating the conceptual framework.

This case study focuses on the phenomenon of valuation of a contaminated wetland. Aspects of the Valuation of land have been addressed in several studies, while wetlands as a constituent part of the ecosystem and its valuation have been researched into by ecologists and environmental scientists. The valuation process has been documented by many Valuation (Appraisal) organisations and the methods of ecosystem valuation well published. This indicates that valuation has been subject to multidisciplinary studies but a review of the multidisciplinary literature reveals the absence of a comprehensive framework integrating the valuation methods used by real property and ecosystem valuers. There is therefore no theoretical framework for the understanding of the complexities involved in the valuation of a contaminated wetland. Applying the process of a conceptual framework listed above, will explain what is required to integrate valuation methods drawn from multidiscipline. To do this, the established Valuation process for ecosystems and real property are first discussed.
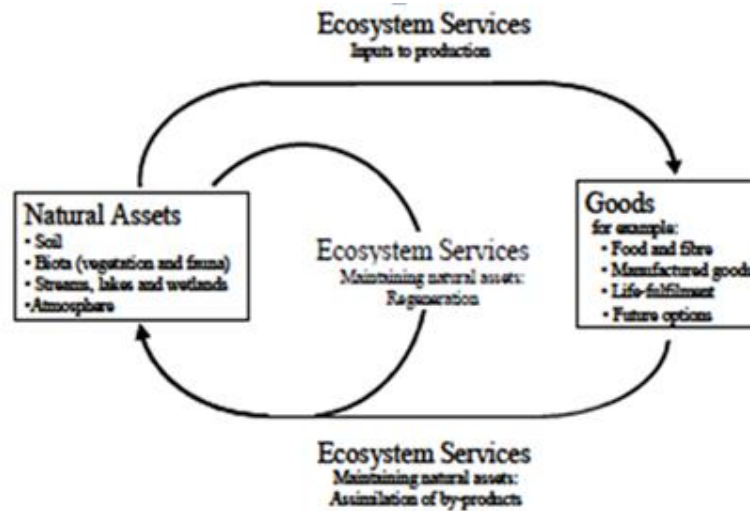
Figure 3.8: Framework for the Valuation of Ecosystem Goods/Services
Source: Cork et al (2001)

This framework defined ecosystem services in terms of three transformations: (1) transformations of natural assets into products valued economically in other ways by people in a catchment; (2) transformations of the by-product of Type 1 ecosystem services back into natural assets; and (3) internal transformations among natural assets to maintain those assets.

The interest of this study is the goods and services produced by the Niger Delta wetlands and destroyed by contamination. Wetlands constitute part of the ecosystem and the concept of ecosystem valuation has gained popularity in the last few years with several authors publishing literature on it (see (Barbier, 1993b, Costanza et al., 1989, de Groot et al., 2006, Carpenter et al., 2006). Pradhan et al. () contends that with the publication of the Millennium Ecosystem Assessment (MA) 2003, more than 1300 authors around the world contributed in assessing the state of different ecosystems and their capability to provide ecosystem services. None of the authors has a real property valuation orientation but some of the methods advocated, can be useful to the property valuer. This study will only detail the goods and services that exist on a wetland and their likely valuation methods as details of ecosystem valuation can be seen in the MA, 2003 publication

Table 3.7: Wetlands Goods/Services and Functions

Wetland Services	Wetland Functions Associated with Services
Flood protection	Surface water detention
	Coastal storm surge detention
Recreation	Provision of habitat for fish and other aquatic animals
	Provision of waterfowl and water bird habitat
	Provision of other wildlife habitat
Maintain drinking water quality	Nutrient transformation
	Retention of sediments and other particulates
Shoreline property protection	Shoreline stabilization
	Coastal storm surge detention
Maintain base flow in streams	Stream flow maintenance
Wildlife habitat and biodiversity	Provision of habitat for fish and other aquatic animals
	Provision of waterfowl and water bird habitat
	Provision of other wildlife habitat
	Provision of habitat for unique, uncommon, or highly diverse wetland plant communities
Commercial products from	Provision of habitat for fish and other aquatic animals
wetlands (e.g., peat, timber, cranberries, rice, fish, shellfish)	Provision of waterfowl and water bird habitat
	Provision of other wildlife habitat
	Provision of habitat for unique, uncommon, or highly diverse wetland plant communities
Reduce pollutants in streams and storm water	Reduce pollutants in streams and storm water
	Nutrient transformation
	Retention of sediments and other particulates

Source: U. S. Centre for Watershed Protection, (2010).

Wetlands are highly productive and valuable ecosystems. The public-good characteristics of many of the goods and services they provide often results in wetlands being undervalued in decisions relating to their use and conservation. Partly as a response to this situation, there is now substantial literature on wetland valuation (Bardecki, 1998, Barbier, 1993b, Brander et al., 2006b, Kazmierczak, 2001). Value is the monetary

measure of the change in human well-being brought about by a function or service, whether from a wetland or golf course (Taff, 1992). Wetland ecosystems, like all ecosystems, include biotic (living) and abiotic (non-living) components that interact dynamically over space and time and Wetland functions are the natural processes that occur in the ecosystem (Miller, 1975). Valuation as an economic measurement aims at valuing the goods and services derived from the ecosystem services which have been categorised by the M A (2005) as shown in Table 3.8 below.

Table 3.8: M A Categories of Ecosystem Services and Examples

Category	Examples of ecosystem services provided
Provisioning services i.e. products obtained from ecosystems	• Food e.g. crops, fruit, fish • Fibre and fuel e.g. timber, wool • Bio-chemicals, natural medicines and pharmaceuticals • Genetic resources: genes and genetic information used for animal/plant breeding and biotechnology • Ornamental resources e.g. shells, flowers
Regulating services i.e. benefits obtained from the regulation of ecosystem processes	• Air-quality maintenance: ecosystems contribute chemicals to and extract chemicals from the atmosphere • Climate regulation e.g. land cover can affect local temperature and precipitation; globally ecosystems affect greenhouse gas sequestration and emissions • Water regulation: ecosystems affect e.g. the timing and magnitude of runoff, flooding etc. • Erosion control: vegetative cover plays an important role in soil retention/prevention of land/asset erosion • Water purification/detoxification: ecosystems can be a source of water impurities but can also help to filter out/decompose organic waste • Natural hazard protection e.g. storms, floods, landslides • Bioremediation of waste i.e. removal of pollutants through storage, dilution, transformation and burial
Cultural services i.e. nonmaterial benefits that people obtain through spiritual enrichment, cognitive development, recreation etc.	• Spiritual and religious value: many religions attach spiritual and religious values to ecosystems • Inspiration for art, folklore, architecture etc. • Social relations: ecosystems affect the types of social relations that are established e.g. fishing societies • Aesthetic values: many people find beauty in various aspects of ecosystems • Cultural heritage values: many societies place high value on the maintenance of important landscapes or species • Recreation and ecotourism
Supporting services, necessary for the production of all other ecosystem services	• Soil formation and retention • Nutrient cycling • Primary production • Water cycling • Production of atmospheric oxygen • Provision of habitat

Source: Department for Environment, Food and Rural Affairs, 2007, p.11.

Haines-Young R and Potschin (2009) states that valuation techniques provide a set of tools to help people compare the benefits and costs associated with different use options and usually, the techniques provide ways of expressing benefits and costs in a common framework so that comparisons can easily be made. While different valuation methods exist, only economic valuations (methods that express costs and benefits in monetary terms), are widely used. Haines-Young and Potschin (2009) contend that the task of economic valuation requires an understanding of what kinds of benefit people receive

through ecosystem services, and how they prioritise them in monetary terms compared to other things and caution that valuation issues cannot be resolved by economists alone. This view indicates that environmental valuation is an interdisciplinary practice. In everyday economics, value is determined by the 'market'. Mahan (1997) opine that for wetland services that are traded in a market, such as crop production and harvesting of commercial fish species, the economic value is the sum of the payments made for the commodities plus an appropriate estimate for consumer surplus. Markets disclose price and quantity information from which payments and consumer surplus can be derived and the consumer surplus measures the welfare gained from consuming a good/service which is measured by the difference between what consumers are willing and able to pay and what they actually pay. Market transactions involve the trading of property or ownership rights. For wetland services that represent collective goods, like recreation, waterfowl habitat, and amenity services, market exchanges do not capture consumers' preferences because property rights are not well defined (Mahan, 1997). In reviewing different valuation studies on wetland valuation, Mahan (1997) concludes that a variety of techniques have been used to value wetland service flows including techniques that do not measure benefits, but rather opportunity costs, as well as, some approaches that do not withstand economic scrutiny, such as wetland values based on prices paid by agencies. Also those different techniques tend to capture benefits from different services or sets of services and the value of services being measured tends to overlap with different techniques. He cautions that It is difficult to get a clear estimate of the total economic value of wetland resources and that measuring wetland services is, imperfect, although meaningful economic information has been obtained in some settings.

Damage assessment for destroyed natural resources on contaminated land, is usually valued with one of five techniques like 1) market-based techniques, which rely on historical information on market prices and transactions to determine resource values; 2) non-market techniques that rely on indirect estimates of resource values; 3) non-market techniques that are based on direct estimates of resource values; 4) cross-cutting valuation techniques which combine one or more of these methods; and 5) ecological valuation techniques used in the field of ecological economics (Ulibarri and Wellman, 1997). Damage assessments are conducted to determine the extent of injury to natural resources and to calculate compensatory monetary damages. This assessment is generally easy where a market exists for the good or service. The market provides information on the behaviour of market participants, in terms of their willingness to pay for a

good/service and its existence, justifies the use of market based methods of valuation. These methods are the usual methods used by real property valuers, (that is market approach, appraisal method and the replacement cost method). The market approach assumes the demand for natural resources is measured on the assumption that many factors that might influence demand, such as personal income, the prices of related goods and services, and individual tastes and preferences, remain unchanged during the study period. The method adopts the estimates the consumer surplus for a good/service as a measure of the satisfaction derived from the good/service and thus what is damaged by contamination. Evaluating consumer surplus requires data of market transactions for varying prices and quantities, as well as information on personal income and the prices of related goods and services (Ulibarri and Wellman, 1997).

The appraisal method adopts the comparative method of valuation and involves selecting comparables from uncontaminated and contaminated properties in the neighbourhood. While this approach relies on the market and the valuer's judgement about comparable sales, it may be difficult to identify 'comparably' contaminated properties and not all natural and environmental resources are traded in the market.

The replacement cost method determines damages for natural resources based on the cost to restore, rehabilitate, or replace the resource or resource service. To use the method, the valuer will collect samples of costs of replacements by substitutes from primary or secondary source information and based on the samples, estimates the likely replacement costs of the contaminated resource. The method requires data on costs to restore, rehabilitate, or replace injured or lost resources and resource services. The problem with the method is that the replacement cost may not cover the actual cost of restoration and it is argued that replacement costs may bear little relationship to the true social value of the resource/service.

3.16.2. Non-Market Techniques:

Market techniques are feasible where market data exists. In many cases, market information relating to prices and accurate quantities of an environmental good/service that will aid value estimation are scarce. In the absence of data, non-market techniques are used. The methods have arisen as a result of market failure to reflect public goods and externalities in the pricing mechanisms, especially for environmental goods/services. The methods are at best surrogate market approaches as they measure consumer behaviour indirectly but they are reliable provided the benefit being valued and the surrogate market

is correctly specified and the prices are not distorted. The methods indirectly observe affected parties behaviours to deduce how much something is worth to those observed. Some of the methods include contingent valuation, travel cost, hedonic pricing, random utility, factor income, and choice modelling.

3.16.3. Contingent Valuation:

The contingent valuation method is a nonmarket valuation technique that is survey-based used for the valuation of nonmarket goods and services. According to Ulibarri and Wellman (1997), it uses questionnaires to elicit information about the preference-related value of the natural resource in question and asks people how much they would be willing to pay for the resource or avoid any damages that might be sustained by the resource. Alternatively, one could ask how much people would be willing to accept as compensation for damages to the resource. Measures obtained using this technique relies on people's hypothetical willingness to pay rather than actual market-information on their behaviour: hence, the term contingent valuation (CV). In using the technique, a hypothetical scenario is created about the occurrence of the environmental condition and people like to be affected are then asked what they might require to either avoid or accept the event in question. The validity of the responses depends on several factors like the expectation of the respondents, their level of awareness of the possible consequences of the event, their level of literacy and the phraseology of the questions. Applications of the method are prone to strategic biases on the part of respondents or to structural problems in the design of the questionnaire (Mitchell and Carson 1989 cited by Ulibarri and Wellman, 1997). Question framing, mode of administration, payment formats, and interviewer interactions can all affect the results of contingent market valuation (Cummings et al. 1986 cited by Ulibarri and Wellman, 1997). It has been argued that the quality of a contingent valuation survey questionnaire is sensitive to the amount of information that is known beforehand about the way people think about the natural resource and prior information on the ecological attributes or environmental qualities of a particular resource are critical factors in conducting a successful contingent valuation survey (Ullibarri and Wellman, 1997).

This study considers the use of contingent valuation to assess damages due to land contamination questionable as respondent have been known to over-state their losses in order to increase the compensation they receive. It also felt that the busy valuer who requires stating an opinion of value on the damages resulting from a contamination will

hardly have the time to conduct the survey, in view of the need for the affected persons to be compensated quickly to enable them recover their losses. Generally it is felt that non-market valuation techniques may not be quite appropriate to assess damages due to contamination, thus in the proposed framework, only the economic methods of valuing wetland ecosystems are incorporated.

3.16.4. Valuation of Land Component of Wetlands:

The assessment of damages due to contamination on land requires the determination of the uncontaminated and contaminated property. The uncontaminated value is the value of the land without any adjustment for any environmental contamination. This value is usually determined by adopting any of the standard valuation methods following the established valuation process. The various valuation methods were described in Chapter One of this study. Several Valuation Processes have been suggested, with the common philosophy being that every valuation assignment is a special problem, requiring special data and particular skill of the valuer. Early valuation principles, practice skills and methodology were informed by judicial findings (Rust and Collins, 1996). According to Lawson (2008), the development of valuation skills and methodology has adopted many skills and methodology from other professional disciplines and practices. Valuers have been taught normative ways to think about valuation problems and many of the professional valuation organisations provide a standard process that should be followed in carrying out a valuation. The Appraisal Institute (2008) prescribed a Valuation Process as shown in Figure 3.9.
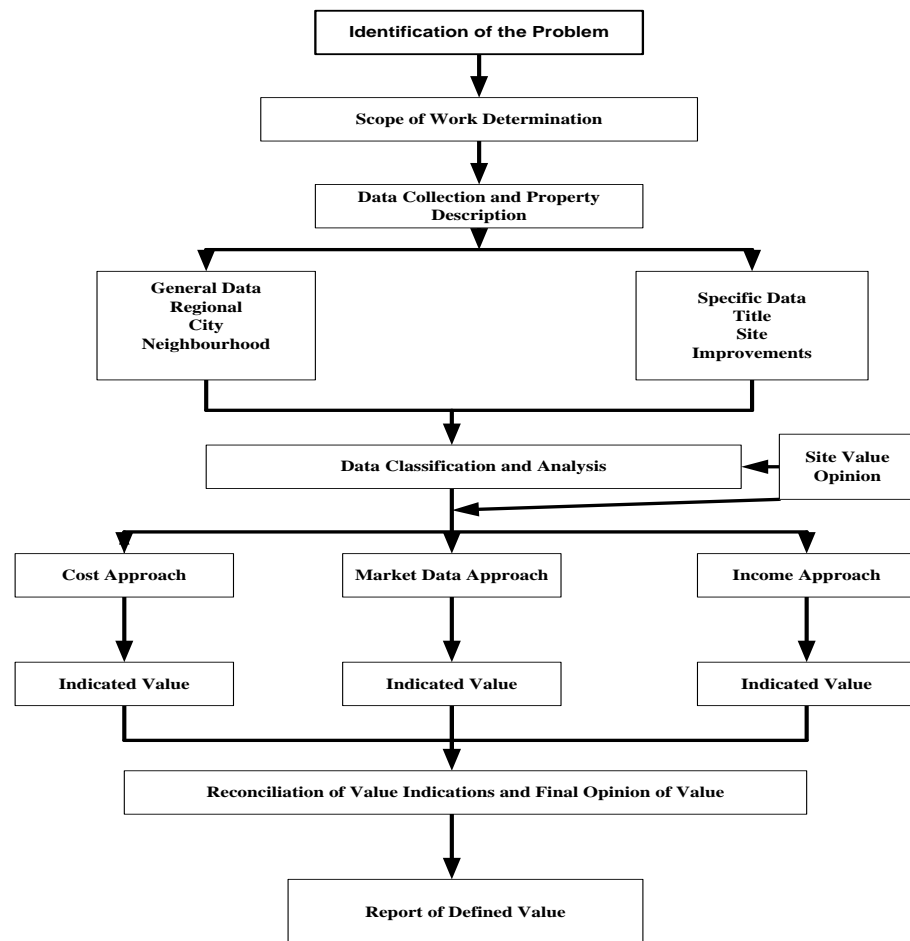
Figure 3.9: Valuation Process

Source: Appraisal Institute (2008)

This process adopts the problem solving approach which according to Ratcliff (1972) is a response to resolve a problem in a decision-making sequence. The process identification of the valuation problem; determining the scope of the assignment; collecting the necessary data and describing the property; analysing the data and determining the highest and best use of the land; applying the three approaches to value and finally, reconciling them and reporting the defined value.

Graaskamp (1991) described this process as too rigid and simplistic and that very often that it does not answer client's valuation questions. He opined the process produces simplistic and erroneous answers to complex valuation problems and that the appraisal profession can move towards more truly professional work if it will apply a more flexible appraisal format; accept market value as a central tendency rather than an exact amount of money; apply most probable use rather than highest and best use; use the value estimating technique or techniques having the highest likelihood of predicting a particular property's most probable sales price, which may or may not include any or all of the three

approaches; and identify the seller's and buyer's motivations. This means that it is possible to avoid using the three approaches or using only one approach to value in a valuation assignment unlike the mandatory use of the three approaches prescribed by the Appraisal Institute. In agreeing with Graaskamp, Hienrich (1980) summarised the new process as entailing the identification of the problem more accurately, recognising the range of accuracy inherent in value estimating, not using terminology that implies accuracy beyond the results, applying only methods that resolve the problem being tackled but applying the method thoroughly, and, finally, testing the results to determine if they meet the applied criteria. Confirming the problem-solving nature of the valuation assignment, Whipple (1993) states that the valuation profession is in trouble and valuers need to improve their performance and review critically their conventional wisdom. He adapted Graaskamp's ideas and put forward a framework of the valuation process which he opined will emphasise definition and solution of valuation problems logically and coherently, to enable valuers enlarge the scope of their services and retain control of clients. He proposed a process as shown in Figure 3.10 as follows:
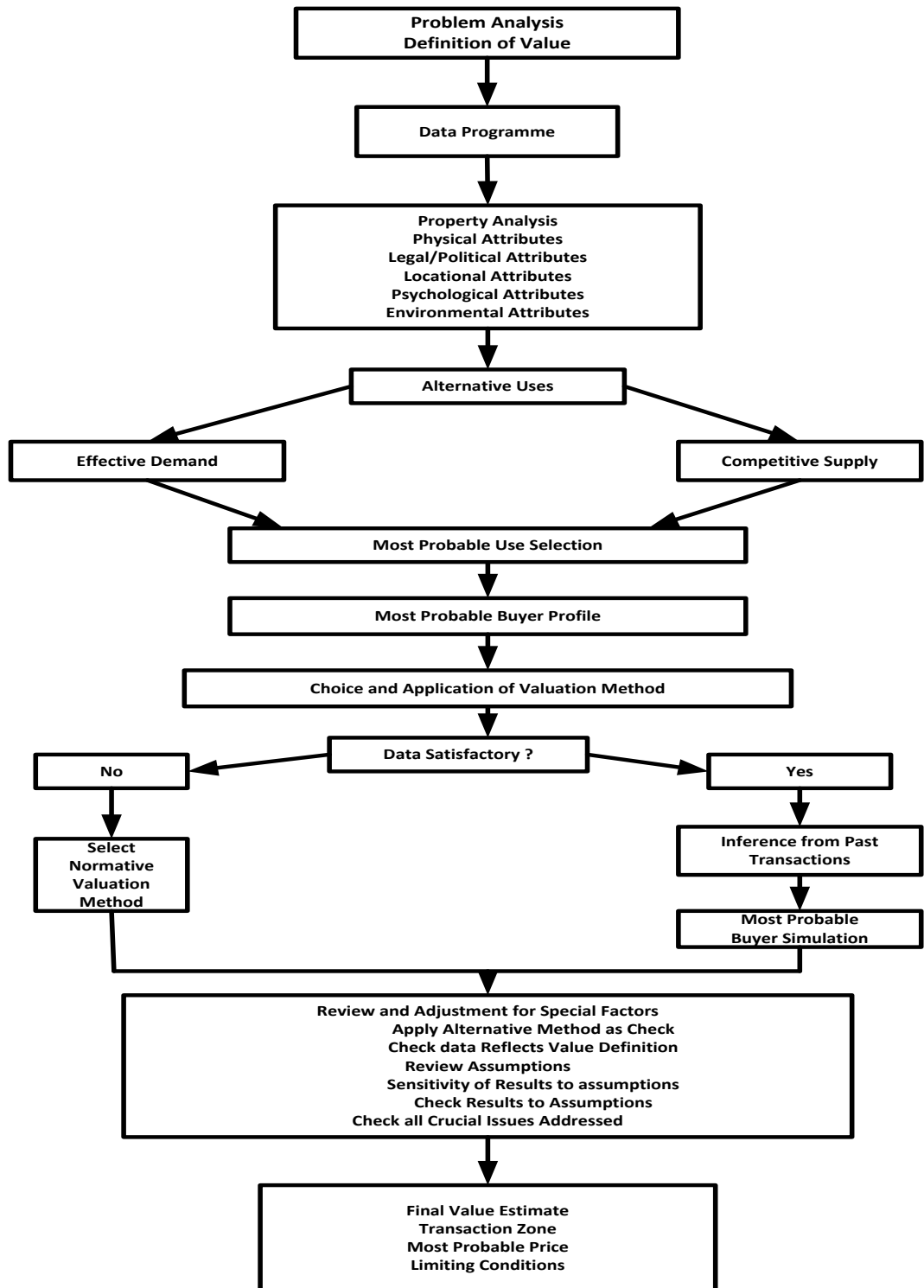
Figure 3.10: Whipple's Valuation Process

Source: Whipple (1993)

The major difference between the two processes is the definition of use for the subject land, and the possible methods of valuation to be adopted. While the Appraisal Institute prescribes the adoption of the highest and best use and a combination of the three approaches to value, Whipple recommends the use of the

most probable use and the application of a suitable valuation method. Kummerow (1997)summarised Whipple's framework as entailing five steps of (1) defining the issue, (2) determining the probable use, (3) identifying the most probable buyer, (4) selecting the valuation method from available options, and (5) adjusting for external factors. In trying to simplify the valuation process, Lusht (1997) proposed a framework as a representation of the problem solving process and which also required ascertaining the highest and best use of a property but still utilises the three approaches to value and eliminates most of the intervening stages. This is shown in Figure 3.11 below.
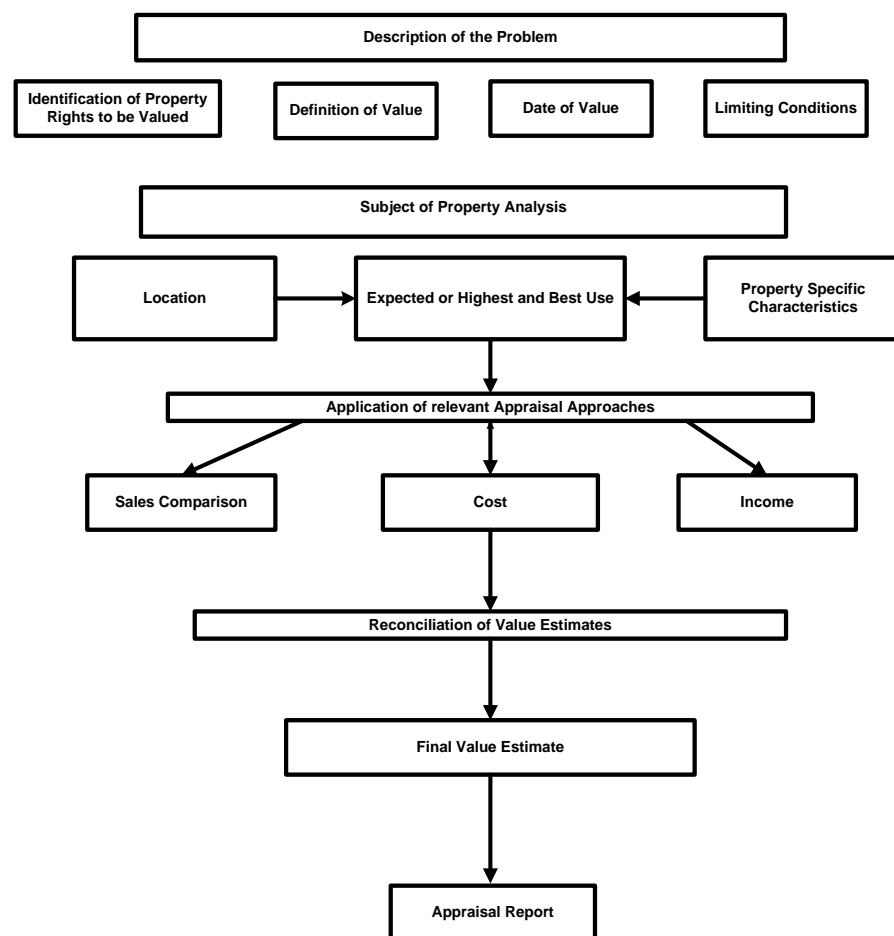
Figure 3.11: Lusht's Valuation Process

Source: Real Estate Valuation Principles and Applications (1997)

3.16.5. Proposed Wetland Valuation Framework:

Howe and Cochrane (1993) suggested that damages to natural capital like rivers, forests, and other natural areas including wetlands, can be included with economic damages due to loss of household and market related productivity from such natural capitals.

After synthesizing some literature and drawing from all the frameworks above and considering the peculiar problem being studied, a framework for the valuation of a contaminated wetland is proposed. This framework consists of three phases of (1) Occurrence of the Pollution/Contamination incident, (2) the Investigative Phase, and (3) the Valuation Phase.

Phase 1 is the pristine state of the wetland in its natural productive state before the contaminating incident occurred like an oil spill from a ruptured oil pipeline which results from differential settlement of the soil. When land owners notice this, they will be startled and suffer some shock. They should ordinarily report the observation to the IOC operating the pipeline.

Phase 2 relates to the investigation of the reported incident to ascertain the full environmental impact. Howe and Cochrane (1993) suggested that such environmental impacts assessments should incorporate the event circle which consists of the pre-event stage, event stage, and the post-event stage. The pre-event stage is the long term recorded data that will provide the baseline data on the characteristics of the wetlands. During the post-event stage, the concern should be the preservation of the environmental attributes valued by humans. A major task should be to assess what damage has occurred to the ecosystem and the prediction of indirect, delayed, and cumulative impacts in addition to measuring the direct impacts. This should be undertaken by various scientists.

Phase 3 is the valuation phase where the valuer is directly involved and selects the valuation methods that will enable him establish the defined value to solve the value problem posed at the receipt of the valuation instruction.

Figure 3.12 illustrates the proposed conceptual framework for the valuation of wetlands.
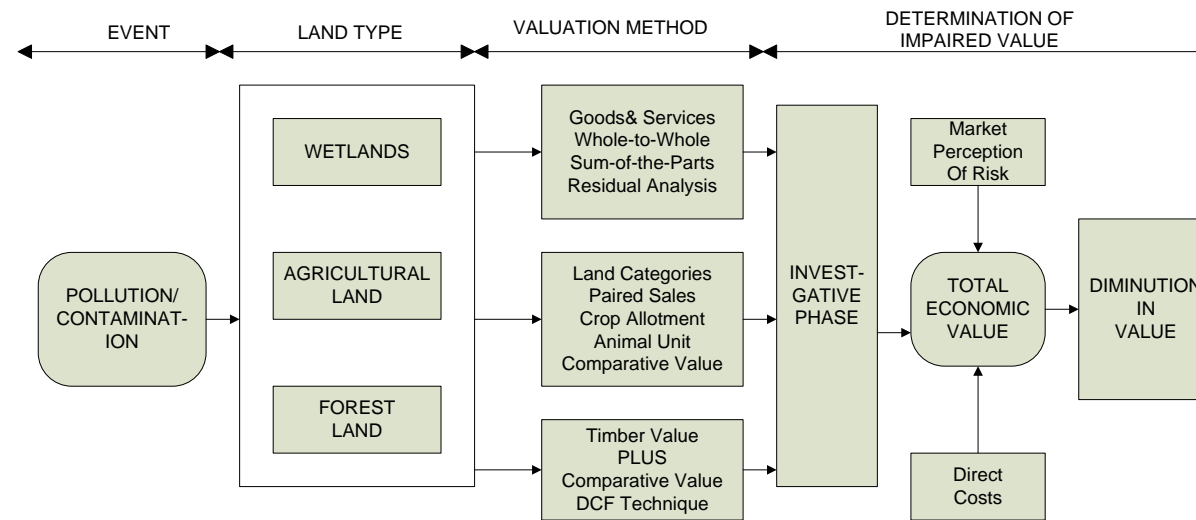
Figure 3.12: Contaminated Wetland Valuation Framework

Source: Researcher's Concept (2013)

3.17. Summary of Literature:

This chapter reviewed several theories that will position this study in the correct sphere of discussion. Beginning with the land tenure and the impact of the nation's land policy, the compulsory acquisition of land was discussed to show how land is usually acquired for oil/gas operations and how compensation is usually assessed. It was found that the methods of valuation used for valuing land that is to be compulsorily acquired is being used to assess compensation on contaminated land. The definition of contaminated land was examined and it was recommended that the IAAO's definition is more relevant to this study. An attempt was made to trace the history of value and how today valuation theory is dependent on the neo-classical school's concept of value. The valuation process was reviewed relate it to the process of valuation and it was indicated that the correct definition of value of a contaminated/polluted land, will be one that does not include the need for a willing seller and buyer. Having introduced the concept of ecosystem valuation, it was concluded that within the Niger Delta, the goods/services derived from wetlands have rarely been valued and in the context of this study, the use of the valuation methods used by ecologists and the assessment of the TEV of wetlands will help quantify the damages to the natural resources in the wake of an oil spillage which appears to be a permanent occurrence there. While a reservation is expressed as to the adequacy of market prices as indicators of value of public goods/services, it is accepted that some value is better than no value. The chapter also reviewed the prevailing methods of valuing contaminated properties in the United Kingdom and in the United States of America and found that the practice is far more developed in America. Within the Niger Delta context, it was found that there is a dearth of literature on the subject of valuation of contaminated/polluted properties, despite the widespread pollution from oil spillages. Attempts to value any polluted land have adopted methods prescribed for the compulsory acquisition of land in Nigeria. Since every valuation assignment constitutes a problem to be solved, with various stakeholders, the study reviewed the problem solving theories and found that valuation problems can be better solved with some behavioural knowledge and after reviewing the stakeholders' theory, it was found that the relationship between the parties involved in any valuation assignment especially when a contaminated wetland is involved can be examined with the stakeholder theory to understand who is critical to making the process of environmental management succeed. The next chapter will discuss the research methodology to be adopted for this study.

CHAPTER 4.   RESEARCH METHODOLOGY

4.1. Introduction

This section presents the research philosophy, methodology, data collection and analysis techniques that were adopted for this research. It discusses the overall evaluation of the research paradigm, design and philosophical underpinning of this study. A discussion of the traditional research approaches of quantitative, qualitative and mixed methods is presented, with a view to choosing the appropriate approach for the study. The mixed method approach was considered most suitable to meet the objectives of the research and answer the research questions. A questionnaire survey was conducted among practicing firms of valuation professionals to ascertain their methods of wetland valuation and the availability of practice standards. Documents were analysed and interviews were used to gather mere in-depth data on the practice of valuation for damage assessment on contaminated lands in the Niger Delta. Both the questionnaire survey and semi-structured interviews were conducted concurrently. The development of a framework is discussed and thereafter a conceptual framework is proposed for the study.

4.1.1.   Research Methodology

Black et al. (2003b), and Sarantakos (2003), related the nature of methodology to the research principles which are related closely to a distinct paradigm, translated clearly and accurately. Collin (2005) described methodology as "the strategy, plan of action, process, or design lying behind the choice of particular methods and linking the choice and use of methods to the desired outcomes". This means that the researcher must adopt a philosophical stance which will inform the strategy, logic, approach and methods to be adopted for any particular research.

4.1.2.   Research Philosophy

From various philosophical strands discussing research methodology, two most prevalent branches are ontology and epistemology (Sutrisna, 2009). Sarantakos (2003) added a third dimension and states that the core components of philosophy include axiology.

Ontology is concerned with the nature of existence and focuses on basic questions and assumptions about the nature of reality. Byrne (2011) stated that ontological assumptions are ways of answering the question: 'What is the nature of social reality?', and that these

assumptions are concerned with what exists, what it looks like, what units make it up and how these units interact with each other.

Kuhn (1970) described ontology as a paradigm, which is a worldview or a way of thinking that reflects fundamental beliefs and assumptions about the nature of phenomena and ultimately shows how one sees and views the world and reality. Applied to a profession, ontology will identify and articulate the core assumptions of members of the profession about the nature of reality that drive the thought and practice of the profession. Two broad divisions of ontology known as objectivism and subjectivism are generally adopted by researchers.

4.1.3. Objectivism

This represents the belief that social entities exist in a reality external to and independent of the social actors (Saunders et al., 2012). This view suggests that valuers apply valuation methods which they have been taught, to every valuation assignment and obtain results.

4.1.4. Subjectivism:

This is an ontological position that asserts that entities are created from the perceptions and consequent actions of those social actors responsible for their creation (Paul, 1993). In this view, it is believed that since interactions between social actors are a continual process, social phenomena are constantly revised.

While the objectivists view valuation as a normative process that is independent of the valuation professionals, subjectivists will argue that value is created and re-created through the different interpretations of complex market phenomena like characteristics of real estate being valued, economic motivation of market participants and personal idiosyncrasies of the market participants. Since entry and exit from the real estate market is continuous, it difficult to isolate, understand and manipulate it with any reasonableness.

This study is concerned with the development of a framework for the valuation of degraded natural resources. It is a study that will try to understand how valuers think and what informs their formation of an opinion of value when required to give one. To understand the valuation process, it is necessary to study the determinant factors influencing the value indicated and this will involve asking questions like:

➢ What is the effective date of the valuation?

➢ What data was used?

- ➢ What influenced the choice of data?

- ➢ What method of valuation was adopted and why?

- ➢ What influences the reliability of the value indicated?

- ➢ How does the valuation process accommodate the interest of the stakeholders? etc.

4.1.5. Epistemology:

"Epistemology is concerned with providing a philosophical grounding for deciding what kinds of knowledge are possible and how we can ensure that they are both adequate and legitimate" (Crotty, 1998). Epistemology also described as the theory of knowledge, tries to understand what the nature of knowledge is and what we regard as acceptable knowledge in a discipline like valuation. It is concerned with the reliability of our valuation senses and the power of the mind and in doing so, seeks to answer questions like:

- ▪ What is knowledge?
- ▪ How does knowledge differ from mere opinion or belief?
- ▪ How is knowledge acquired?
- ▪ When is a belief justified or reasonable?

There are different epistemological assumptions made by different researchers and may include Positivism, Interpretivism and Realism.

Positivism is a position that holds that the goal of knowledge is simply to describe the phenomena that we experience. Interpretivism is the epistemological stance that advocates the necessity to understand the way we humans make sense of the world around us, while Realism is the epistemological stance that objects exist independently of our knowledge of their existence. Axiology is the study of judgmental values, as it is argued that the researcher is very often required to state his own values explicitly to guide readers of the research findings, to judge the validity of the conclusions.

4.2. Research Logic

From the stance, we consider the possible research logic that can be applied. Such logic may be deductive, inductive or abductive. Denzin and Lincoln (2000) and defined deductive logic as the process of inferring particular instances from a general law while inductive logic involves the inference of a general law from particular instances. Abductive logic describes the operation of making a leap to a hypothesis by connecting

known patterns to specific hypothesis. Abduction is generally concerned with the practical need to take action, which motivates us to provisionally accept a hypothesis upon which we can base our next steps. It allows the decision maker move forward in the absence of complete evidence or certainty. Saunders, et al (2012) states that abduction begins with the observation of a 'surprising fact', it then works out a plausible theory of how this could have occurred and agrees with DeLisle (1985) that some plausible theories can account for what is observed better than others and it is these theories that will help to uncover more 'surprising facts'.

This study is such that there is a paucity of literature on the valuation of contaminated natural resources as such literatures that exist are only tangential to the problem under consideration. There is also no relevant literature on the valuation of the effect of oil spillages in the Niger Delta wetlands that is accessible. It follows that we cannot be definite in adopting either the deductive or inductive logic, but rather the abductive logic appears more suitable to the study.

4.2.1. Abduction

Dew (2007) defines abduction as the process of making guesses about the best way to explain a collection of surprising or anomalous facts from research findings. Abduction allows the decision-maker to move forward in the absence of complete evidence or certainty. Instead of following a logical process, advances in science are often achieved through an intuitive leap that comes forth as a whole, and which can be called abductive reasoning (Taylor et al., 2002).

4.3. Research Approach

Three basic approaches to research are possible, namely quantitative or qualitative and mixed method approaches. While the quantitative approach is an inquiry into a social or human problem, based on testing a theory composed of variables measured with numbers, and analysed with statistical procedures in order to determine whether the predictive generalizations of the theory hold true (Kuhn 1970), qualitative research is an inquiry process of understanding a social or human problem based on building a complex, holistic, picture, formed with words, reporting detailed views of informants and conducted in a natural setting (Creswell John, 2003). The qualitative approach provides insights into the setting of a problem, generating ideas and/or hypotheses for later quantitative research and can be used to uncover underlying motivations and prevalent trends in thought and opinion

and factors that influence decision making and opinions. It can be used to look for a range of ideas and feelings about an issue or to understand different perspectives between groups and categories of people. When used with quantitative research in a mixed method, it explains the findings from such a study. Since it works from the specific to the general, only a small number of non-representative cases may be studied and the respondents are usually selected to fulfil a given quota. The design is non-statistical and employs unstructured or semi-structured techniques to conduct either an exploratory or investigative study. Though by design, it may not yield a statistically generalizable finding, its outcome can be a sound base for further decision making.

4.4. Research Methods

In this study, the qualitative paradigm shall be adopted, using the phenomenological approach and adopting strategies and methods that are suitable for a phenomenological study. Possible strategies that could be used are Surveys, Experiments, Ethnography, or Case Study. However, no research method is inherently superior or inferior to any other (Saunders, et al, 2012). Saunders, et al (2012) argue that the choice of a method should be guided by the research objectives and questions, the extent of existing knowledge, the time and other resources available, as well as the philosophical stance .

The processing of property information is purely behavioural and involves the valuers' decision-making abilities and as (Gallimore, 1996) confirms that there is a growing recognition of the contribution to be made by an understanding of people's actual, rather than theorised, behaviour in the performance of professional tasks. Since this study is designed to investigate how valuers value contaminated properties, it is a phenomenological study with valuation practice as the phenomenon. As such a study, the case study methodology will be adopted since the study is exploratory and evaluative in nature.

4.4.1. Case Study Method

A case study approach is an empirical inquiry that investigates a contemporary phenomenon within its real-life context and addresses a situation in which the boundaries between phenomenon and the context are not clearly evident and uses multiple sources of evidence, (Yin, 2009a). This definition consists of vital components like:

- a strategy,

- concerned with research,

- empirical,

- focused on a phenomenon in context, and

- using multiple methods.

Citing Gummesson, 1988, Meyer (2001) states that the detailed observations entailed in the case study approach, enable us to study many different aspects, examine them in relation to each other, view the process within its total environment and also use the researchers' capacity for interpretation (Levy, 2006) . Case studies provide opportunity to describe, understand, and explain a phenomenon. Simons (2009) cited in Thomas (2011) defines a case study as an in-depth exploration from multiple perspectives of the complexity and uniqueness of a particular project, policy, institution, programme or system in a 'real life' context. It is research-based, inclusive of different methods and is evidence-led with the primary purpose of generating in-depth understanding of a specific topic, programme, policy, institution or system to generate knowledge and/or inform policy development, professional practice and civil or community action. Case selection must be determined by the research purpose, questions, propositions and theoretical context, but there will also be other constraints that impact on case selection. These include accessibility (whether the data needed can be collected from the case individual or organisation), resources (whether resources are available to support travel and other data collection and analysis costs), and time available (if time is limited, it may be easier to analyse a small business rather than a large business, or to identify a unit of analysis within a large organisation, rather than seek to study the organisation in its entirety (Mills et al., 2010).

Generalisation of the case study so that it contributes to theory is important. Generalisation can only be performed if the case study design has been appropriately informed by theory, and can therefore be seen to add to the established theory. The method of generalisation for case studies is not statistical generalisation, but analytical generalisation in which a previously developed theory is used as a template with which to compare the empirical results of the case study. If two or more cases are shown to support the same theory, replication can be claimed. In analytic generalisation, each case is viewed as an experiment, and not a case within an experiment.

Tellis (1997a) stated that case study satisfies the three tenets of qualitative research of describing, understanding, and explaining and that case study evaluations, cover both process and outcomes since they can include both quantitative and qualitative data. Case studies are generally of three types- exploratory, explanatory and descriptive.

Exploratory Case Study: Yin (2003) defines it as the type of study used to explore those situations in which the intervention being evaluated has no clear, single set of outcomes. Where exploratory case study is used, fieldwork and data collection may be undertaken before defining the research questions and hypothesis. The use of Pilot surveys prior to the design of survey instruments, is a type of exploratory study which provides a basis for the final survey questions that may be used.

Explanatory Case Study: these are useful for doing casual studies and are stated by Yin (2003) to be used in seeking to answer questions designed to explain the casual links in real-life interventions that are too complex for the survey or experimental strategies.

Descriptive Case Study: this type is used to describe a phenomenon and the real-life context in which it occurs (Yin, 2003) and require the researcher to begin with a descriptive theory which must cover the depth and scope of the phenomenon under investigation (Tellis, 1997).

4.4.2. Case Study Design:

According to Yin (2003) a case study design should be considered when: (a) the focus of the study is to answer "how" and "why" questions; (b) you cannot manipulate the behaviour of those involved in the study; (c) you want to cover contextual conditions because you believe they are relevant to the phenomenon under study; or (d) the boundaries are not clear between the phenomenon and context. In designing a case study, (Yin, 1994) indicated five component parts of a research design that should be considered, to include the study's research questions, the propositions (if any), the units of analysis identified, the research logic linking the data to the propositions, and the criteria for interpreting the findings. Case studies may be single or multiple and holistic or embedded. A single case involves the study of a particular phenomenon in depth in a given organisation while a multiple case studies more than one phenomenon in different organisations.

Single case studies are appropriate when the case is special (in relation to established theory) for some reason. This might arise when the case provides a critical test to a well-

established theory, or where the case is extreme, unique, or has something special to reveal. Single case studies are also used as a preliminary or pilot in multiple case studies.

Case studies can also be divided into holistic or embedded studies. Holistic case studies examine the case as one unit. According to Yin (2009), they might for example, focus on broad issues of organisational culture or strategy. This approach ensures a general view of the case, but can be superficial, and may miss changes in the unit of analysis that could impact on the appropriateness of the original research design. Embedded designs identify a number of sub units (such as meetings, roles or locations) each of which is explored individually; results from these units are drawn together to yield an overall picture. The biggest challenge with embedded designs lies in achieving a holistic perspective from the analysis of the sub-units.

4.4.3. Case Study Data Collection:

Whichever sources of evidence are used, there are three key principles of data collection that need to be observed (Yin, 2009, Rowley, 2002, Mills *et al*, 2010, Thomas, 2011):

1. **Triangulation** - one of the great strengths of case studies as compared with other methods is that evidence can be collected from multiple sources. Triangulation uses evidence from different sources to corroborate the same fact or finding.

2. **Case Study Database** - A case study database of the evidence gathered needs to be collected. Whilst a report or dissertation may be the primary concentration of the case study, a well organised collection of the evidence base will strengthen the repeatability of the research, and increase the transparency of the findings. This base may include case notes made by the researcher, documents collected during a study, interview notes or transcripts, and analysis of the evidence.

3. **Chain of Evidence** - The researcher needs to maintain a chain of evidence. The report should make clear the sections on the case study databases that it draws upon, by appropriate citation of documents and interviews. Also, the actual evidence needs to be accessible in the databases. Within the database, it should be clear that the data collection followed the protocol, and the link between the protocol questions and the propositions/objectives should be transparent.

Commenting on the selection of strategy in the choice of cases, Flyvbjerg (2006) opined that the various strategies of selection are not mutually exclusive and that a case may be both extreme and critical and paradigmatic, the interpretation of which provides various

views and deductions. He stated that the major advantage of case study is that it focuses on real-life scenarios and tests views in relation to a given phenomenon as it develops and that as it draws the researcher closer to reality, it provides a learning process that is required for advanced understanding of the phenomenon. Table 4.1 compares case study with experiment and survey strategies of research.

Table 4.1: Case Study Compared to Other Methods

Purpose	Case Study	Experiment	Survey
Investigates....	one case or a small number of cases	a relatively large number of cases	a relatively large number of cases
Data collected and analyzed about.....	a large number of features of each case	a small number of features of each case	a small number of features of each case
Study of.....	naturally occurring cases where the aim is not to control variables	cases where the aim is to control the important variables	naturally occurring cases selected to maximize the sample's representativeness of a wider population
Quantification of data....	is not a priority	is a priority	is a priority
Using.....	many methods and sources of data	one method	one method
Aiming to.......	look at relationships and processes	look at causation	look for statistical generalization

Source: Thomas, 2011

In this research, the single embedded case study type is adopted. Four of the States within the Niger Delta that have suffered from oil spillages will constitute the case study and the Valuation and Estate Surveying Firms are the embedded cases (units of analysis).

4.4.4. The Rationale for the Single-Case Design:

Yin (2009b) stated certain conditions that may warrant the use of a single case study design to include:

1) The case must be critical. The phenomenon of oil pollution contamination is critical to the Niger Delta region as the Country's economy is dependent on revenues derived from the International Oil Companies which dominate the regions landscape and has been a constant source of conflict between the communities in the region and the Nigerian Government on the one hand and the oil and gas companies operating in the region. Since both the Niger Delta region's and the Country's economy depend on oil and gas activities to prosper, it becomes necessary that the source of the contamination problem needs to be isolated as critical case for study.

2) The case represents an extreme or unique case. Each oil pollution incident is unique and the attendant damages vary from one to the other. Also, the terrain impacted and the scientific impacts differ and require a special study. The impacts of gas pollutions also differ and in some cases, there might be a pollution or contamination without any appreciable deleterious impact on the environment. Though the entire Niger Delta is predominantly a wetland region, the economic productivity of each zone differ as some may contain less non-timber forest products (NTFPs) than others and some NTFPs in the riverine Niger Delta invariable differ from those of the upland Niger Delta. Such unique characters, justify their being treated as a case for study.

3) The case must be representative or typical. Yin (2009) said the objective here is to capture the circumstances and conditions of an everyday or commonplace situation, thus oil and gas contamination in the Niger Delta being an everyday occurrence, makes it a representative case for other environmentally contaminated regions where oil and gas is being exploited and should provide lessons to be learnt and avoided if the effects and their assessment are adequately documented by a study. As Bell and al (2008) stated "there is really no 'typical' impact or off-the shelf answer for how an oil spill affects property values. There is not an automatic negative impact on property values, even though we may be led to believe there would be."

4) The case should be revelatory. The phenomenon of oil contaminated land assessment has been rarely documented as most researches have concentrated on the assessment of compensation for the acquisition of land for oil and gas operations to the neglect of the effects of any contamination. Treating this phenomenon as a case study will reveal the peculiarities of the effects and provide measures of how to mitigate their adverse consequences.

5) The case should be longitudinal, that is it should be studied at two or more different points in time. In a research such as this, this study provides the first opportunity to study the process of assessing damages on contaminated land in the Niger Delta which should be repeated later. Since the nature of a PhD research does not admit a longitudinal study, it is hoped that another researcher will study the contamination phenomenon at another stage to confirm or disprove any findings herein.

In justifying the use of case studies in general and single case-studies in particular, Flyvbjerg (2006) gave five reasons as (1)-Case studies are necessary as predictive theories and universals cannot be found in the study of human affairs like understanding valuers'

heuristics that this research is concerned with. He argued that concrete, context-dependent knowledge is therefore more valuable than the vain search for predictive theories and universals. (2)-One can often generalise on the basis of a single case, and the case study may be central to scientific development via generalisation as supplement or alternative to other methods. He contended that formal generalisation is over-valued as a source of scientific development whereas 'the force of example' is underestimated. (3)- The case study is useful for both generating and testing of hypothesis but is not limited to these research activities alone. (4)- The case study contains no greater bias towards verification of the researcher's pre-conceived notions than other methods of inquiry. On the contrary, experience indicates that the case study contains a greater bias towards falsification of preconceived notions than toward verification. (5)- Though summarising case studies is often difficult, this is due to the properties of reality studied than the case study as a research method. Often, it is not desirable to summarise and generalise case studies as good studies should be read as narratives in their entirety.

4.5. Unit of Analysis:

The unit of analysis refers to the level of social life that is the planned focus of a study (Yin, 2009). It is the entity about which data will be collected. Interest in correctly identifying a study's unit of analysis is driven by our concern with minimizing errors when drawing conclusions based on our research. The unit of analysis restricts the conclusions we can draw from our research efforts. If our unit of analysis is the individual, we can only draw conclusions about individuals. If we collect data about groups, we can only draw conclusions about groups. While the individual is the typical unit of analysis in social research, it is also the case that research efforts can be focused on any level of social life. In this research, the practicing Valuation and Estate Surveying Firms are the units of analysis as these are the people who carry out valuations to assess the damages resulting from any contamination incident in the Niger Delta. They are the only persons permitted by law (Cap E. 13 of LFN 2007), to determine value of any definition in Nigeria and they can only practice presently, in the name of a registered firm. There is no restriction to the place of practice in Nigeria, the only requirement being the registration under Cap E. 13 (LFN, 2007).

4.6. Mixed Methods

Mixed methods research is formally defined here as the class of research where the researcher mixes or combines quantitative and qualitative research techniques, methods, approaches, concepts or language into a single study (Johnson and Onwuegbuzie, 2004). The logic of inquiry includes the use of induction (or discovery of patterns), deduction (testing of theories and hypotheses), and abduction (uncovering and relying on the best of a set of explanations for understanding one's results. It is a 'research in which the investigator collects and analyses data, integrates the findings and draws inferences using both qualitative and quantitative approaches or methods in a single study' (Tashakkori and Teddlie, 2003, Tashakkori and Creswell, 2007).

Creswell and Clark (2011) recommended that a mixed methods researcher selects a design that reflects interaction, priority, timing and mixing of the data and listed four basic design types to include the convergent parallel, the explanatory sequential, the exploratory sequential and the embedded design. Figure 4.1 illustrates diagrammatically, the various design types. The main difference between the designs is the timing of the collection and analysis of the different strands of data (that is quantitative or qualitative).

(a) Convergent Parallel Design

```
Quantitative
Data Collection
And Analysis  ┐
              ├──→  Compare  ──→  Interpretation
Qualitative   ┘      Or
Data Collection      Relate
And Analysis
```

(b) Explanatory Sequential Design

```
Quantitative          Qualitative
Data Collection ──→ Follow up with ──→ Data Collection ──→ Interpretation
And Analysis                          And Analysis
```

© Exploratory Sequential Design

```
Qualitative                        Quantitative
Data Collection ──→  Builds to  ──→ Data Collection ──→ Interpretation
And Analysis                       And Analysis
```

(d) Embedded Design

```
Quantitative (or Qualitative ) Design

  Quantitative (or Qualitative)
  Data Collection and Analysis        ──→  Interpretation

  Qualitative (or Quantitative)
  Data Collection and Analysis
  (before, during, or after)
```

Figure 4.1: Typology of Mixed Method Designs

Source: Creswell and Clark, (2011)

In this study, the convergent design is adopted. This design occurs when the researcher collects and analyses both quantitative and qualitative data during the same phase of the research process and then merges the two sets of results into an overall interpretation (Creswell and Clark, 2011). The design is said to be most suitable, when the researcher intends to triangulate the quantitative and qualitative methods by directly comparing the statistics of the former with the qualitative findings for confirmation and validation purposes. Morse, 1991 cited by Creswell and Clark, 2011 stated the purpose of the convergent design as being to obtain different but complementary data on the same topic. The design is also useful for illustrating quantitative results with qualitative findings, combining corresponding quantitative and qualitative results to advance a complete understanding of a phenomenon under study. Creswell and Clark (2011) recommended that a convergent design may be adopted when (1) there is limited time for data collection and both types must be collected in a single visit, (2) it is felt that there is equal value in

collecting and analysing both quantitative and qualitative data about the phenomenon under study, (3) the skills of the researcher can analyse both quantitative and qualitative data, and the researcher can cope with the rigors of extensive data collection and analysis. Figure 4.2 illustrates the schematic diagram for the design used for this study.
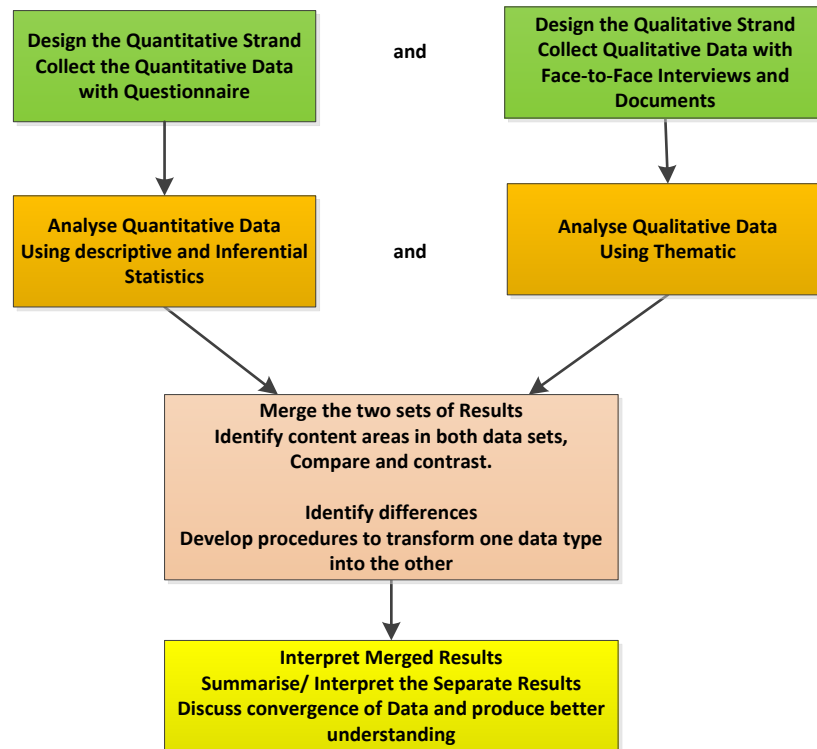
Source: Creswell and Clark, 2011

Figure 4.2: Convergent Parallel Design for the Study
Source: Creswell and Clark, 2011

Although it is clear that a mixed methods approach has much to offer a researcher, there have been criticisms of its use. Many of these criticisms focus on the incompatibility thesis, that is, the belief that quantitative and qualitative research methods cannot be mixed in a single study as they have such different ontological and epistemological origins (Doyle et al, 2009). Some of the strengths and weaknesses of this design are shown in Table 4.2 below.

Table 4.2: Advantages and Disadvantages of Mixed Methods

Strengths	Weaknesses
*It is easy for new researchers.	* Can be difficult for a single researcher to carry out both qualitative and quantitative research, especially if two or more approaches are expected to be used concurrently; it may require a research team.
*It produces an efficient design enabling both types of data to be collected in a single phase of the study and enables each type of data to be collected and analysed separately.	* Researcher has to learn about multiple methods and approaches and understand how to mix them appropriately.
* Words, pictures, and narrative can be used to add meaning to numbers.	* Methodological purists contend that one should always work within either a qualitative or a quantitative paradigm.
* Numbers can be used to add precision to words, pictures, and narrative.	* More expensive and requires expertise.
* Can provide quantitative and qualitative research strengths in a single research.	* More time consuming and requires much effort to collect both types of data with the same emphasis at the same time.
* Researcher can generate and test a grounded theory.	* Some of the details of mixed research remain to be worked out fully by research methodologists (e.g., problems of paradigm mixing, how to qualitatively analyse quantitative data, how to interpret conflicting results).
* Can answer a broader and more complete range of research questions because the researcher is not confined to a single method or approach.	* different sample sizes for each type of data may pose problems when merging the data sets, and the merging may not be very easy and there may be difficulties in explaining the findings when contradictions arise from the results.
* A researcher can use the strengths of an additional method to overcome the weaknesses in another method by using both in a research study.	
* Can provide stronger evidence for a conclusion through convergence and corroboration of findings.	
* Can add insights and understanding that might be missed when only a single method is used.	
* Can be used to increase the generalizability of the results.	
* Qualitative and quantitative research used together produce more complete knowledge necessary to inform theory and practice.	

Source: Adapted from Creswell and Clark, 2011, and Johnson and Onwuegbuzie, 2004

4.7. Data Collection Criteria

4.7.1. Sampling

All units of data that the researcher intends to study normally constitute the population of study. It is always not practicable to collect data about the entire population so researchers usually adopt a sample to represent the whole population. A sample is 'a portion, piece, or segment that is representative of a whole while sampling is an act, process, or technique of selecting an appropriate sample' (American Heritage College Dictionary, 1993, p. 1206). Sampling transcends research in general and research paradigms in particular (Onwuegbuzie and Leech, 2007). While there is a general agreement that sampling is required for quantitative studies, qualitative studies pose definitional problems about what

constitutes a sample. Choosing a study sample is an important step in any research since it is rarely practical, efficient or ethical to study whole populations (Marshall, 1996). According to Marshall (1996), the aim of all quantitative sampling approaches is to draw a representative sample from the population, so that the results of studying the sample can be generalised back to the population and for qualitative studies, the aim is to provide illumination and understanding of complex psychosocial issues.

Denzin and Lincoln (2005) cautions 'that qualitative researchers must confront three crises, namely, representation, legitimation, and praxis'. This implies a non-representativeness of qualitative research which threatens its findings. Sampling on the basis of demographic characteristics presents a problem of achieving both informational and size adequacy in qualitative studies (Sandelowski, 1995). According to (Morse, 2000), estimating the number of participants in a study required to reach saturation depends on a number of factors, including the quality of data, the scope of the study, the nature of the topic, the amount of useful information obtained from each participant, the use of shadowed data (reporting on others experience), and the study method and design used. Quantitative studies generally employ probability sampling methods while qualitative studies utilise non-probability sampling techniques. The sampling techniques are summarised by(Denscombe, 2007) shown in Table 4.3 as follows:

Table 4.3: Sampling Techniques

Probability Sampling:	Non-Probability Sampling:
Where the researcher has a significant measure of control over who is selected and on the selection methods for choosing them. Sampling methods allow for representative cross-sections, or particular groups to be identified or targeted.	Where the researcher has little initial control over the choice of who is presented for selection, or where controlled selection of participants is not a critical factor.
Main Methods: Simple Random Sampling: (selection at random by the researchers from a choice of subjects)	Main Methods: Convenience Sampling: (sampling those most convenient; those immediately available)
Systematic Sampling: (selecting by the researchers at numbered intervals, e.g. every one person in five in the target group)	Voluntary Sampling: (the sample is self-selecting; they come forward voluntarily in response to an appeal)
Stratified Sampling: (sampling within particular sections of the target groups, e.g. you target a specific number of people based on the percentage of the total group that share the same characteristics. So, for example, in a study of an organisation that had 50 supervisors & 800 labourers, a 10% representative sample of this population would target 5 supervisors & 80 labourers to **interview**	Purposive Sampling: (enables you to use your judgement to choose people that are presented or are available that best meet your objectives or your target groups).
Cluster Sampling: (surveying a particular cluster of the subject group)	'Snowball' Sampling: (building up a sample through informants. You start with one person – who then suggests another & so on)
	Event Sampling (using the opportunity presented by a particular event, e.g. a conference, to make contacts)
	Time Sampling: (recognising that different times or days of the week or year may be significant and sampling at these times or data

Source: Denscombe, (2007)

In selecting any type of sampling technique, the logics of probability and purposeful sampling are arguably sufficiently irreconcilable in most cases to preclude using the same subjects for both quantitative and qualitative purposes (Morse, 1991, cited by Sandelowski, 1995). This according Sandelowski (1995), means that subjects selected for the purposes of statistical representation as in quantitative studies, may not fulfil the informational needs of the study, while participants selected for information purposes as in qualitative studies, do not always meet statistical representativeness. Sandelowski (1995) suggests that studies combining qualitative and quantitative approaches, whether designed for purposes of completeness or confirmation would require two samples drawn according to the two logics of sampling.

4.7.2. Within-case Sampling

Miles and Huberman (1994) stated that the activities, processes, events, times, locations, and role partners to be sampled should be considered in any research. They proposed that such sample must be theoretically driven and that choices of informants, episodes, and interactions should be driven by conceptual questions, not by concern for

'representativeness', to get to the construct that is needed to see different instances of it, at different moments, in different places, within different people. What is important, is the conditions under which the construct or theory operate and not necessarily with the generalisations of the findings to other situations. Within-case sampling is iterative; the researcher observes, talks to people, and picks up artefacts and documents leading to new samples of information and observations and new documents (Ndlovu, 2008)

Since we are selecting cases from the Niger Delta, we shall adopt a sampling technique which will capture the firms that have conducted valuation of polluted land in the case study areas. Yin (2009) posits that a scientific sampling logic is not required for case studies, as case studies cover both the phenomenon of interest and its context, yielding a large number of relevant variables that will require too many cases to allow for any statistical consideration. In view of this we will draw cases from firms known to have been involved in compensation assessment for land pollution damages, in the Niger Delta region. For a full representation of valuation practice, we will select cases from Government Practices, Professional Firms, International Oil Companies (IOCs) and Academic Professional Valuers. In each firm, we will interview about two or three professionals, thereafter we will administer questionnaires on about fifteen practicing firms within the State. The Government Valuers are considered because they are frequently required to mediate to resolve disputes between polluters and land owners. The polluters are mostly the IOCs who are usually advised by Professional Firms on their liability for compensation when any pollution occurs and we intend to interview about two Professional firms for each IOC. The Professional Firms advice the land owners while the Academics train prospective professionals and will be used for validation of the cases. In selecting the cases, we can adopt probabilistic or non- probabilistic sampling though not required for case study research. In this study we consider the purposive/convenience and voluntary sampling techniques suitable.

Based on the researcher's professional experience, some practicing firms in the case study area have been identified from the list of professional firms available with the Nigerian Institution of Estate Surveyors and Valuers, which is the Professional Body that registers Professional Firms in Nigeria engaged in Valuation Practice. These firms have been selected purposively based on their years in practice and frequency of participation in valuation of contaminated land. These firms will be interviewed face to face. About fifteen firms from each State will thereafter be given questionnaires which will serve as a cross-

check on the report of the interviews. The selection is restricted to the Niger Delta because of the prevalence of oil pollution cases which result in land contamination in this region. To validate the results from the firms, academics who train prospective valuation professionals have been identified and are willing to participate in the study. Table 4.4 below, summarises the choice.

Table 4.4: Sampling Frame of Study

Sampling Type	Participant	Location	Rationale
Purposive/ Convenience	Government Valuers (2 from each State)	State Ministries of Lands	Main employers of Valuation Professionals who adjudicate on Valuation disputes when pollution occurs.
	Professional Firms Of Valuers (18 from-each State	Niger Delta States of Akwa Ibom, Cross-River, Delta, And Rivers	Main States that have experienced oil spill contamination
	International Oil Companies (IOCs)	Within the Niger Delta States	Main Polluters whose operations cause oil spillage
Voluntary	Academics	Universities	Trainers of prospective Valuers

Source: Author's Configuration, 2012.

4.7.3. Sample Size

Morse's (1995:147) cited by Guest et al. (2006) comments succinctly sum up the situation; she observed that "saturation is the key to excellent qualitative work," but at the same time noted that "there are no published guidelines or tests of adequacy for estimating the sample size required to reach saturation."

Research that is field oriented in nature and not concerned with statistical generalizability often uses non-probabilistic samples. The most commonly used samples, particularly in applied research, are purposive (Miles and Huberman, 1994). The common element in all purposive sampling techniques is that participants are selected according to predetermined criteria relevant to a particular research objective. Morse (1994:225) cited by Guest et al. (2006) outlined more detailed guidelines. She recommended at least six participants for phenomenological studies; approximately thirty-fifty participants for ethnographies, grounded theory studies, and ethno science studies; and one hundred to two hundred units of the item being studied in qualitative ethology. Creswell's (1998) ranges are a little different. He recommended between five and twenty-five interviews for a phenomenological study and twenty-thirty for a grounded theory study. Kuzel (1992) tied his recommendations to sample heterogeneity and research objectives, recommending six

to eight interviews for a homogeneous sample and twelve to twenty data sources "when looking for disconfirming evidence or trying to achieve maximum variation."

For quantitative studies, Krejcie and Morgan (1970) provided a table that can be used in selecting the sample size from a given population at the .05 degree of accuracy. For instance if a population of 200 is chosen, then the sample size will be 136 at the .05 level of confidence. Tellis (1997b) argues that it is a fact that case studies do not need to have a minimum number of cases, or to randomly "select" cases.

4.8. The Study Methodology and Method:

4.8.1. Introduction

Methodology is described by Small (2011) as the study of which methods, or classes of methods that are most effective in finding the truth of statements about the world. Valuation as a professional activity, belongs to the property discipline like property brokerage, construction etc., which provides many goods and services in terms of infrastructure and demand for space. Diaz (1990) opined that the property discipline belongs to the group of study that seeks to describe and understand human activity and that it is necessary to develop competencies that lead to the engineering of descriptive results if there would be practical improvement. In developing the science of property economics, the error of considering all knowledge to be in the form of mathematics should be avoided (Small, 2006). Valuations and appraisals are the product of human judgement and are a function of the way in which valuers process information and the processing of property information is purely behavioural and involves the valuers' decision-making abilities and as Gallimore (1996) confirmed that there is a growing recognition of the contribution to be made by an understanding of people's actual, rather than theorised, behaviour in the performance of professional tasks. Since this study is designed to investigate how valuers value contaminated properties, it is a phenomenological study with valuation practice as the phenomenon. As such a study, the case study methodology will be adopted since the study is exploratory and evaluative in nature. It will adopt a single case study holistic design where the Valuation Professional Firms practicing in the Niger Delta region will constitute the units of analysis and their valuation practice will be the case to be studied. The case-study will utilise a Case Study Process consisting of certain stages as follows:

• Define and Design of the Case Study;

• Prepare and Collect and Analyse Field Data;

- Analyse and Conclude.

These are illustrated in Figure 4.3, as the Case Study Process.
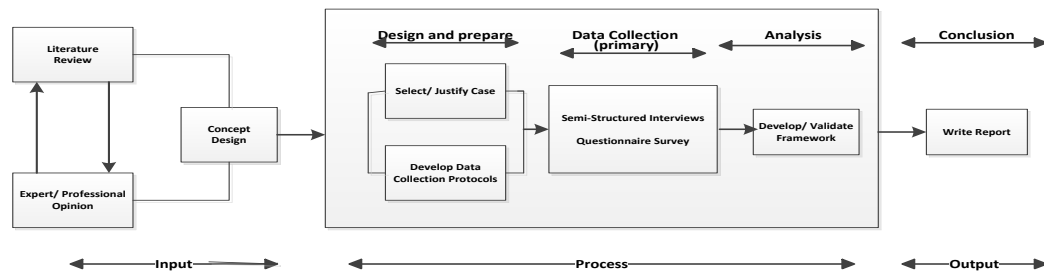
Figure 4.3: Case Study Process

Source: Adapted from Kuatunga (2008)

During the defining and designing (input) stage, we will develop the theory that informed the study, select the cases to be studied and design the data collection protocol which will detail how data will be collected and the instruments for our data collection. The next stage (process) will entail conducting the case studies by visiting the case study firms and collecting relevant data with the instrument designed during the first stage. From each case, as we collect data, we will analyse the data and study the emerging trends with a view to making necessary adjustments where needed. Each case report will indicate how and why a particular objective was demonstrated or not demonstrated. The main analysis of the data will be done on return to draw cross-case conclusions, indicating any replicability or contrasting result, and modify the theory and develop policy implications of the research, which will be presented in the form of a report which constitutes the output of the process.

Since we are selecting cases from the Niger Delta, we shall adopt a sampling technique which will capture the firms that have conducted valuation of polluted land in the case study area. Yin (2009) posits that a scientific sampling logic is not required for case studies, as case studies cover both the phenomenon of interest and its context, yielding a large number of relevant variables that will require too many cases to allow for any statistical consideration. In view of this we will draw cases from firms known to have been involved in compensation assessment for land pollution damages, in the Niger Delta

region. For a full representation of valuation practice, we will select cases from Government Practices, Professional Firms, International Oil Companies (IOCs) and Academic-Professional Valuers. The Government Valuers are considered because they are frequently required to mediate to resolve disputes between polluters and land owners. The polluters are mostly the IOCs who are usually advised by Professional Firms on their liability for compensation when any pollution occurs. The professional Firms advice the land owners while the Academics train prospective professionals and will be used for validation of the cases.

In selecting the cases, we can adopt probabilistic or non- probabilistic sampling though not required for case study research. In this study we consider the purposive and voluntary sampling techniques suitable. Based on the researcher's professional experience, some practising firms in the case study area have been identified from the list of professional firms available with the Nigerian Institution of Estate Surveyors and Valuers, which is the Professional Body that registers Professional Firms in Nigeria engaged in Valuation Practice. These firms have been selected purposively. The selection is restricted to the Niger Delta because of the prevalence of oil pollution cases which result in land contamination in this region. To validate the results from the firms, academics who train prospective valuation professionals have been selected and interviewed.

4.8.2. Data Collection Method

Data collection in research is common to both quantitative and qualitative research. Difference arise mainly due to the restrictions imposed on flexibility, structure, sequential order, depth and freedom that a researcher has in their use during the research process (Kumar, 2011). Some methods like observations and interviews may be used by both quantitative and qualitative researchers. Kumar (2011) posits that if an observation is recorded in a narrative or descriptive format, it becomes qualitative information, but if it is recorded in categorical form or on a scale, it will be classified as quantitative information.

Gallimore (1996), states that to investigate valuers' perception of the stages of the valuation process and in particular the stages that involve decisions about the selection of comparables, we can use postal questionnaires or with smaller samples, conduct an interview. This research will adopt the interview, questionnaires and document examination methods for the collection of field data from the case studies. Interviews involve a person-to-person interaction with a specific purpose in mind, and entails asking questions of the respondents and recording the answers. It may be flexible or highly

structured but generally falls into three groups like structured, semi-structured and unstructured types.

The structured interview involves the use of questionnaires based on a predetermined and identical set of questions, which are served on the respondents and the questions are read out by the researcher and the responses are recorded on the questionnaires. The semi-structured interview entails the researcher listing out themes and areas to be covered and raising questions on the identified themes and recording the responses. The feasibility of interviews for this research is based on the researcher's direct access to prospective interviewees, being colleagues in the same profession who are identified to be active in the field of valuation of contaminated properties. Secondly, it is preferred because it will minimise the cost and time spent in the field to collect data.

4.8.2.1. Observations

This may be participant observation or non-participant observation. Observation is defined as a purposeful, systematic and selective way of watching and listening to an interaction or phenomenon as it takes place (Kumar, 2011). Snow and Thomas (1994) stated that direct or participant observation involves a very close relationship with the phenomenon under study. Participant observation occurs when a researcher participates in the activities of the group being observed in the same way as the members, with or without their knowing that they are being observed. Non-participant observation occurs when the researcher does not get involved in the activities of the group but remains aloof just watching, observing and listening, drawing conclusions from his observations.

In this study, the observation method was used to observe an actual oil spillage site at Bodo Community where digital photographs of the spillage had been taken by an earlier researcher. The observation by this researcher was to confirm what the spill site looks like and whether the photograph captured the exact occurrence on site now.

4.8.2.2. Interviews

Burns (1997) defined it as 'a verbal interchange, often face to face, though the telephone may be used, in which an interviewer tries to elicit information, beliefs or opinions from another person'. Interviews involve asking questions of those who have information about a phenomenon that the researcher has not been able to observe directly (Snow and Thomas, 1994). In practical terms it involves the researcher reading out questions to the respondents and recording their answers with a recording device. Interviews may be

flexible or structured. In the flexible interview, the researcher asks questions freely as he recalls, not following any order and as the respondent answers, the researcher asks follow-up questions as the need arises. In the structured type, the researcher follows a predetermined order of questioning and questions. Various classifications of interviews exist but may look like Figure 4.4 below.
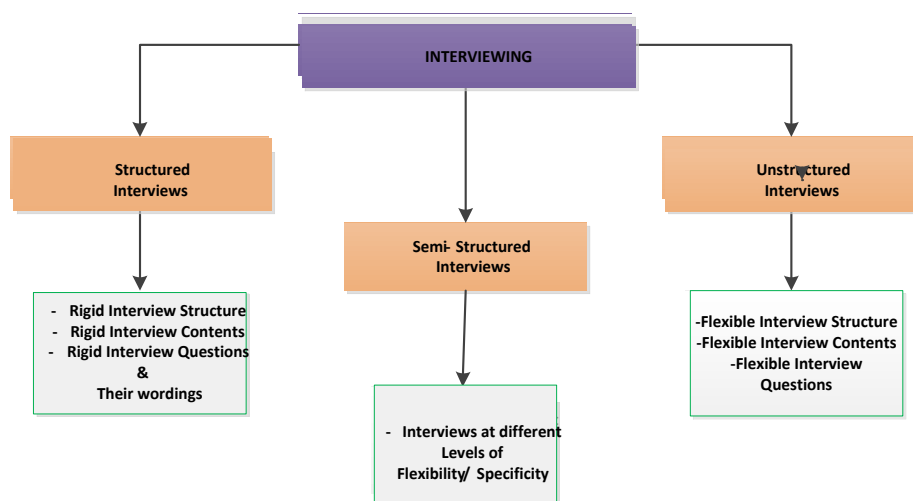
Figure 4.4: Types of Interviews

Source: Adapted from Kumar (2011)

Interviews according to Veal (2006) tend to be used in (1) where the subject of the research are few in number so a questionnaire based research may be inappropriate, (2) the information likely to be obtained from respondents is expected to be complex and different between the respondents; and (3) where the topic is being explored preliminarily as a prelude to a larger study. For this study, the nature of the data sought, is complex being that it is exploring professional behaviour and very few professional valuers are known to be experienced in the type of valuation being studied, hence interviews became an optional method of data collection.

4.8.2.3. Questionnaires

Kumar (2011) defined a questionnaire as a written list of questions, the answers to which are recorded by respondents. Where the questionnaire is completed by the respondents in the absence of the researcher, it is referred to as a postal questionnaire, but where it is completed verbally by responding to questions in the presence of the researcher, it is a structured interview. The major difference between an interview schedule and a questionnaire is that in the former it is the interviewer who asks the questions and if

necessary, explains them and records the respondent's replies on an interview schedule, and in the later replies are recorded by the respondents themselves (Kumar, 2011).

4.8.2.4. Document Analysis:

Bowen (2009) opined document analysis is a systematic procedure for reviewing or evaluating both printed and electronic material. Corbin and Strauss (2008) posit that like other analytical methods in qualitative research, document analysis requires that data be examined and interpreted in order to elicit meaning, gain understanding, and develop empirical knowledge. It is expected that a qualitative researcher draws from more than a single source of evidence to buttress the findings and Denzin (1970) stated that a combination of methodologies in the study of same phenomenon is often used as a means of triangulation. Generally, document analysis has both advantages and disadvantages and these are given by Bowen (2009) as shown in Table 4.5 below.

Table 4.5: Advantages and Disadvantages of Document Analysis

Advantages	Disadvantages
More efficient as it requires data selection rather than data selection.	They provide insufficient detail since they are provided for some other purpose and may not provide sufficient detail to answer the research question.
Many documents are available in the public Domain and less difficult to obtain.	They may sometimes be irretrievable as access to it may be restricted.
Very cost effective, being less costly than other research methods and is a preferred method when new data is not feasible.	Documents selection may be biased due to incomplete selection as available documents are likely to be aligned to suit the organization's policies.
Documents are unobtrusive and non-reactive as they are not affected by the research process.	
Documents are stable as the investigator's presence does not alter what is being studied.	
It provides the exact names, references and details.	
Documents provide broad coverage and cover a long span of time, events and settings.	

Source: Bowen (2009)

In this research several documents were analysed to gain some understanding about the Niger Delta economy, its development and the environment in general. The relevant laws dealing with oil and gas operations and Court judgements together with Rules and Regulations governing the practice of Valuation in Nigeria were examined. The full list of these documents is shown in Appendix H.

4.8.2.5. Research Data

Data for this research was collected with both questionnaire and expert interviews.

Questionnaire was administered simultaneously with interviews, to valuation firms in the case study area as a further means of data triangulation, being a study on the behaviour of valuers. This is supported by Sogunro (1997) who used questionnaires combined with interviews, document analyses, and direct observations to examine the impact of training on leadership development. To ensure that the questionnaire was responded to, the semi-structured questionnaire after design was piloted and a preliminary analysis was carried out on the pilot data. The results of the pilot survey helped in reshaping the final questionnaire which was distributed in hard copy to the respondent firms in their registered office addresses. Respondents, who were far from the researcher's field office, received electronic copies of the questionnaire after they had been contacted on the telephone. Each respondent was given two weeks to complete the questionnaire, at the end of which they were given one more week after being reminded on the telephone. Constant telephone calls were made to the respondents to ensure that they responded and after five weeks, it was felt that those who had not responded would not respond again. A total of 120 questionnaire were sent out simultaneously as the interviews were been conducted to the firms, ministries and academics. 65 firms responded out of which 62 completed questionnaire, representing a response rate of approximately 52% were useable. The other 3 were discarded due to incompleteness. This response rate compares favourably with that of Black et al (2000) where a response rate of 25% was considered adequate for construction industry research. Appendix C2 shows the demographics of the respondents.

4.8.3. Data Analysis

Qualitative data analysis focuses on what should be the basis of analysis of the information obtained from the field. Patton (1990) cited by Castellan (2010) state that three kinds of data are typically collected in qualitative research, namely interviews, observations, and written documents. Castellan (2010) describes data analysis as an on-going inductive process where data are sorted, sifted through, read and reread. The inductive process involves analysing data with little or no predetermined theory, structure or framework and uses the actual data itself to derive the structure of analysis (Burnard P et al., 2008). Thematic content analysis is the most common type of inductive process used in qualitative research and involves analysing interview transcripts, identifying themes within the data and gathering all themes together. Thomas (2006) opine the primary purpose of the inductive process is to allow research findings emerge from the frequent, dominant, or significant themes inherent in raw data, without the restraints imposed by structured

methodologies. The aim of data analysis is to reduce the volume of data to a manageable summary and display the data in a form that will aid drawing of conclusions from it. The analysis may be done manually or through a computer assisted qualitative data analysis software (CAQDAS) package like NVivo, depending on the quantity of data to be analysed. For this research only a basic analysis of the data without NVivo

The data analysis for this research was in three strands. These were:

a)   Analysis of the returned questionnaire

b)   Review of written documents, and

c)   Analysis of semi-structured interviews.

4.8.3.1. Analysis of questionnaire data

To make meaning of the survey responses, the research adopted a computerized data analysis process using the SPSS and EXCEL software package. The large volume of data generated by the survey required an accurate and systematic analysis to achieve the set objectives of the study. To achieve this, both descriptive and inferential statistical analysis were required. Descriptive analysis was done to estimate the mean, spread of the scores of the various variables, and a plot of the distribution exhibited by the sample. Inferential analysis helps the researcher to discover the relationship between the variables, characteristics of groups of variables and to measure the differences in the distribution of two related variables (Pallant, 2007). The analysis of questionnaire data for each research objective is shown in the appropriate sections of chapters 5 and 6 below.

4.8.3.2. Analysis of semi-structured interviews

Qualitative data may be reported by: (1) developing a narrative to describe the phenomenon, (2) identifying the main themes emerging from the transcription of the in-depth interviews and writing about them, quoting verbatim where necessary, and (3) in addition to (2) above, codifying the main themes in order to reflect their importance. Adopting the inductive approach, the research collected interview data from face to face expert interviews, observed the wetlands that had suffered contamination from oil pollution. Interview transcripts were repeatedly scrutinized to derive codes and themes, comparing these to the literature and aligning them to the questionnaire themes, to ascertain which themes and concepts were critical and after repeated reviews, the themes were modified until final codes and themes were derived. The analysis of the expert

interview data for each research objective is shown after the results of the questionnaire analysis, in the appropriate sections of chapters 5 and 6 below.

4.8.4. Validation

Validation represents the process whereby a researcher checks the quality of data, results and four tests have been widely used to establish the quality of empirical social research, namely construct validity, internal validity, external validity, and reliability.

1. Construct validity - establishing correct operational measures for the concepts being studied. This is concerned with exposing and reducing subjectivity, by linking data collection questions and measures to research questions and propositions.

2. Internal validity (for explanatory or causal studies only and not for descriptive or exploratory studies) establishing a causal relationship whereby certain conditions are shown to lead to other conditions, as distinguished from spurious relationships. The framework indicates the relationship of one variable to the other in the assessment process.

3. External validity: establishing the domain to which a study's findings can be generalised. Generalisation is based on replication logic as discussed above, thus the framework that results from this research can be used in valuing contaminated land anywhere in the country.

4. Reliability: demonstrating that the operations of a study - such as the data collection produced can be repeated with the same results. This is achieved through thorough documentation of procedures and appropriate recording keeping.

In this research, the framework for assessing the compensable value of damages on contaminated land with natural resources will be validated by ensuring that the questions on the questionnaire addresses the objectives and using academics that are known to participate in professional practice and research in valuation studies in some Universities. Figure 4.5 shows the methodological framework for this study while Table 4.6 shows the Architecture and Philosophy of the questionnaire and the Interviews.
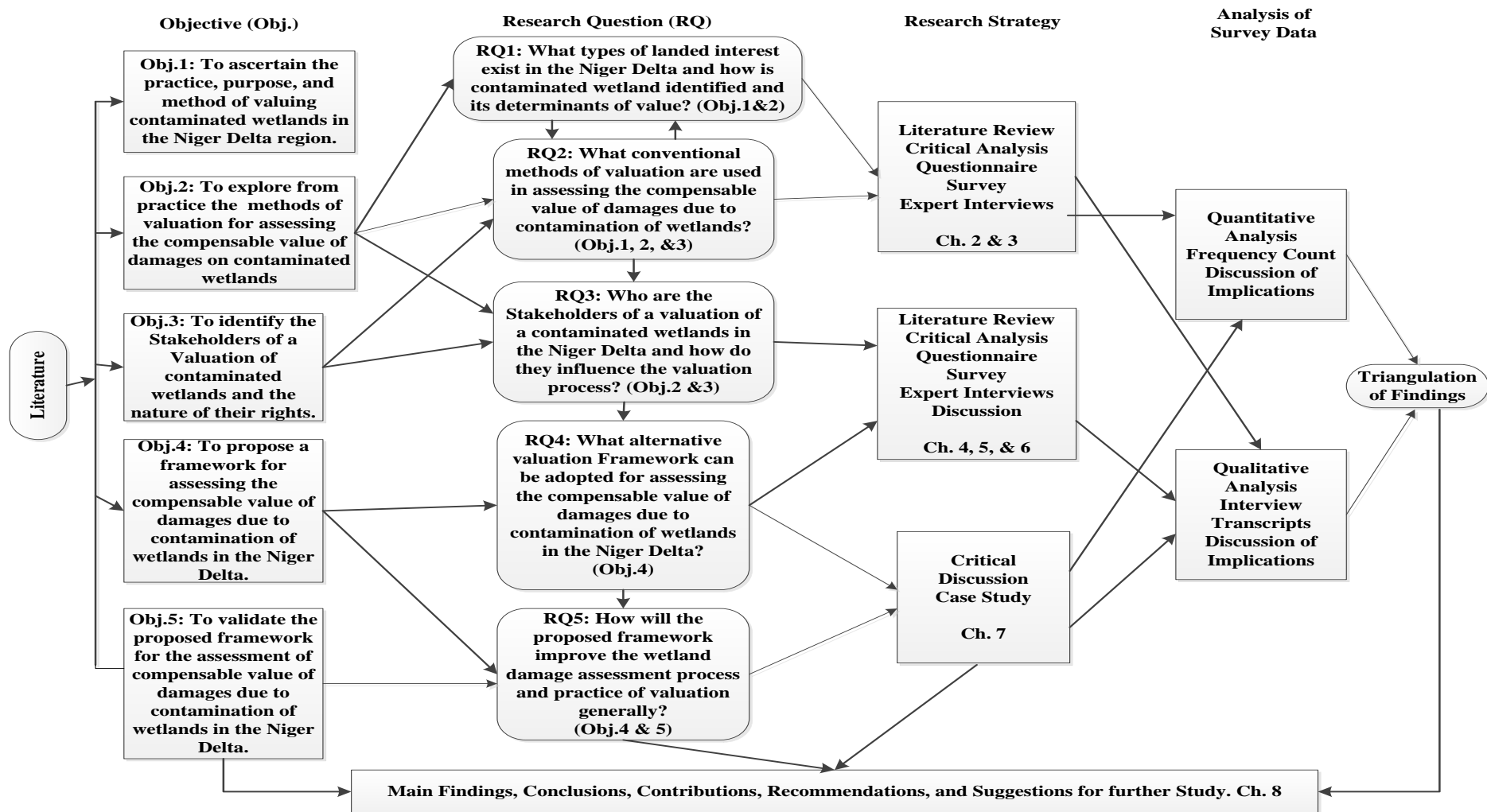
Figure 4.5: Methodological Framework for this Research

Table 4.6: Architecture and Philosophy of Research Questionnaire and Interviews

Specific Focus	Description	Question Groups
Interviewee	Information on respondents' background like classification of practice, role in the firm, professional and employment experience.	1, 2a, 2b, 3,
Agricultural Land	This section covers the purpose of valuation and the definition of value of agricultural land, the valuation methods used, the influence of law on valuation method choice and the frequency of valuations.	4,6,7,8,9
Wetland Valuation	This section aims at evaluating the practice of valuing wetlands, the goods and services incorporated in the valuation, the valuation method, purpose and the frequency of wetland valuation.	3,10,11
Contamination Damage	This section seeks to ascertain the method of valuation used in the assessment of damages due to contamination on both agricultural land and wetlands, the frequency of such assessment, the identification of a contaminated land, the method of valuation, years of experience and choice of comparables, and availability of market data.	5, 12, 13, 14, 17, 18, 19
Stakeholders	This section tries to identify the influential stakeholders in valuations for damage assessment in the Niger Delta.	20, 21
Professional Skills	This section tried to identify the availability of skills and data required for valuation of contaminated land in the Niger Delta.	2a, 15, 16, 17, 18, 19,
Standards	These questions tried to discover the awareness of the existence of both local and international standards for use in the valuation of contaminated wetlands, the availability of a framework, the adequacy of the valuation curricular, and the need of a composite framework for assessing damages due to contamination.	22, 23.

4.9. Summary of Methodology:

After reviewing the various philosophical stances and relating them to the study, it was concluded that a behavioural study such as this, assumes an ontological stance of subjectivism and an epistemological stance of interpretivism since the aim is to understand how valuers in the Niger Delta value contaminated wetlands. Since the researcher is also a valuer, the study assumes that the researcher brings to the research his experiences as a valuer and thus the study is value laden. The nature of valuation requires the valuer to use the valuation method that will solve the valuation problem defined on receipt of instructions, a process which may involve trying with different methods before settling for the best. In view of this, the abductive logic is adopted while a mixed method approach involving the concurrent use of both expert interviews and questionnaire survey is adopted as the appropriate approach. In selecting a method, the research considered the fact that valuers are trained generally on the same valuation curriculum and a qualified valuer can practice anywhere in the Niger Delta. In view of this, the entire Niger Delta region is considered a single case study from where the study sample is drawn, to enable the researcher draw an in-depth exploration from multiple perspectives of the complexity and uniqueness of a valuation project, policy, institution, programme or system in a 'real life' context, Also, since valuers practice their profession in the name of a firm of valuers, the Valuation Firms are considered the unit of analysis of the study. After discussing the sampling technique that may be possible, the study adopts a purposive sampling technique and compliments this with documentary evidence and observations made during field visits and justifies the use of expert interviews and questionnaire survey as the correct methods of studying the phenomenon of valuing contaminated wetlands. The concept of a conceptual framework was discussed and after considering the various frameworks available for valuing wetlands independent of the land component and taking the position that a wetland consists of both wetland and upland, a conceptual framework is proposed. It is proposed that the resultant frame work to be developed will be validated by a sample of 10% of the valid responses received, to ensure its validity and reliability.

The next chapter will show the results of applying the chosen methodology for the subject study begin the process of addressing the various objectives of the study stated in Chapter One.

CHAPTER 5.   VALUATION METHODS SUITABLE FOR DAMAGE ASSESSMENT

5.1. Introduction:

This chapter examines the various valuation methods in use in the Niger Delta region as revealed by the respondents to the questionnaire survey and triangulating this with the views expressed by respondents to the expert interviews with purposely selected professional valuers in the region. The chapter first examines the valuation methods being used for the compulsory acquisition of agricultural land, then compares this with the methods used to value contaminated agricultural land and noting in the process how the natural resources on the land is incorporated in the valuations. This is followed by an examination of the identified functions of wetlands and the valuation methods used to value wetlands for sale and when contaminated. In examining the valuation method used for valuing contaminated wetlands, the indicators of contamination are also reviewed. Since most valuation methods are market based, an examination of the source of data used for valuations is undertaken as well as the factors influencing the choice of valuation methods. It is expected that at the end of this examination, the methods of valuation being used to value contaminated wetlands in the process of assessing damages due to contamination will be ascertained and the implications of adopting the present method for policy, practice and education will be identified.

5.2. Definition of Valuation Problem:

This study asserts that every valuation assignment is a problem requiring a solution, and in the theories of problem solving the commencement point is the definition of the problem. In valuation, this will partly be reflected in the type of value that the valuer seeks to ascertain thus respondents were asked to indicate the type of value sought in their valuation when compulsory acquisition is undertaken or when determining the compensable value due to damages suffered as a result of contamination of land. To do this certain types of values were shown on the questionnaire including Market Value (MktValue), Impaired Value, Statutory Value (StatValue), Investment Value (InvestValue), and Special Value. This study adopts the definitions of these values as stated by the IVSC (2007) that:

- Market value is the estimated amount for which a property should exchange on the date of valuation between a willing buyer and a willing seller in an arm's-length transaction after proper marketing wherein the parties had each acted knowledgeably, prudently, and without compulsion.

- Impaired value is the loss in the future economic benefits or service potential of a property due to the occurrence of contamination or the effect of any deleterious material placed on the property.

- Statutory value is the value of the property estimated in accordance with the provisions of the concerned statute.

- Investment value is the value of property to a particular investor, or class of investors, for identified investment or operational objectives, and

- Special value is an amount above market value that reflects particular attributes of a property that are only of value to a Special Purchaser.

When asked to state which value that was defined in either of the two scenarios, respondents appeared to give different interpretations to the question as shown by their responses. Figure 5.1 shows that while valuing for compulsory acquisition, 81% of the valuers representing 49 respondents said they seek special value, 10% (6) sought market value, while 3% (2) sought either statutory value,
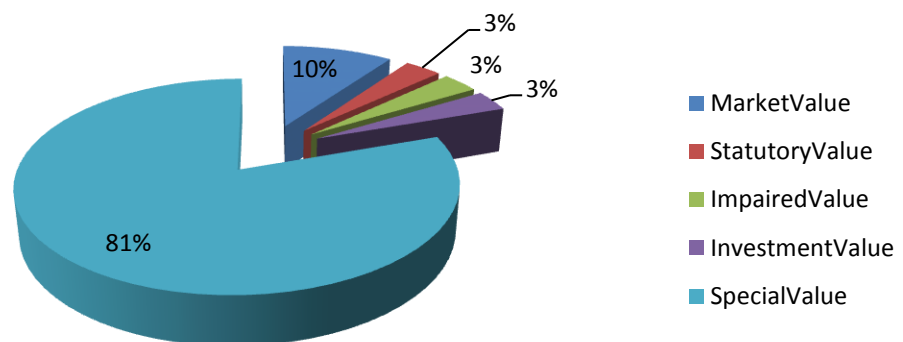
Figure 5.1: Value Sought in Compulsory Acquisition

Source: Field Data (2013)

or impaired value, or investment value respectively. In contrast, Figure 5.2 shows that only 18% representing 11 respondents sought a special value. Similarly 33% (20) sought

investment value, 28% (17) sought market value, and 20% (12) sought impaired value, while only 1% (1) sought the statutory value.
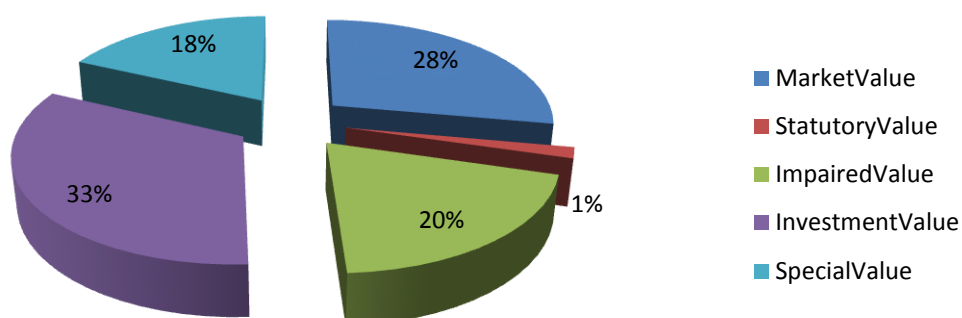
Figure 5.2: Value Sought in Damage Assessment Valuations

Source: Field Data (2013)

By definition, these results are intriguing as they show an insufficient knowledge of the implications of not correctly defining the value sought in any valuation. In practice any valuation that is statutorily based should seek the statutory value as defined by the relevant statute and any valuation that is market based should seek the type of market value defined by the valuer, which may be any of the values stated above. It was expected that compulsory acquisition in the Niger Delta being a statutory undertaking, should seek the statutory value of the agricultural land defined in the enabling statute and any valuation for the assessment of damages due to contamination should seek the impaired value of the subject properties. This position is confirmed by RESP7 when he said that:

"Compulsory acquisition is a statutory act subject to the provision of the LUA and the value determined should be in accordance with the methods prescribed by this law which in the case of physical structures, it is the Depreciated Replacement Cost method and for crops/economic trees, the "Appropriate Officer" prescribes the rates to be used though these rates should reflect market value."

and RESP6 who said that:

"For polluted lands, the valuation should be on open market basis, adopting direct comparison approach."
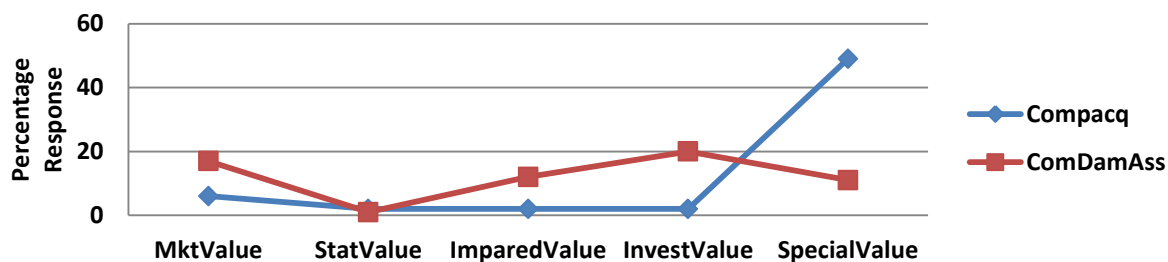
Figure 5.3: Comparison of Values Sought

Source: Field Data (2013)

Key
Compacq = Compulsory Acquisition
ComDamAss = Compensation for Damage Assessment

When both results are compared, it becomes surprising to see that while impaired value should rank highest when contamination damage assessment is being done, it now ranks least while investment value ranks highest as in Figure 5.3 above. Similarly while statutory value should be highest when compulsory acquisition valuation is being done, it ranked least and special value ranked highest. This result shows that valuers generally would like to avoid defining statutory value as the value being sought, irrespective of the purpose of the valuation. Also there is the possibility that valuers do not strictly adopt statutorily defined methods of valuation hence they decide to find a special value in any assignment. It is in the bid to clarify this anomaly that respondents were asked to indicate the frequency of use of the various valuation methods when valuing for a compulsory acquisition assignment discussed in the next section.

5.3. Choice of Valuation method in Compulsory Acquisition of Agricultural Land (Q. 7)

Most of the upland part of the Niger Delta Wetlands is used for agricultural practices and most of the lands acquired compulsorily are agriculturally used. In view of this it was necessary to ascertain which method of valuation was used for determining compensation payable for any compulsorily acquired land in the Niger Delta. The various methods of valuation which included Comparable Sales; Depreciated Replacement Cost; pre-determined Compensation Rates; Income Capitalisation; Subdivision Development Valuation; Land Value Extraction; Discounted Cash Flow; Contingent Valuation; and Hedonic Pricing Models; were discussed in section 3.9.2. Valuers were asked to state the frequency of use of any particular method of valuation out of the 9 different methods of

valuation for compulsory acquisition valuations. 61 usable questionnaires were retuned and analysed.

Table 5.1: Frequently Used Valuation Methods

	Never	Almost Never	Occasionally	Almost Every Time	Every Time
CompSal	29	7	13	10	2
	47.5%	11.5%	21.3%	16.4%	3.3%
DepRep	21	5	17	8	10
	34.4%	8.2%	27.9%	13.1%	16.4%
PreRate	6	5	6	32	12
	9.8%	8.2%	9.8%	52.5%	19.7%
Incmet	29	14	11	6	1
	47.5%	23%	18%	9.8%	1.6%
Subdivmet	45	11	5	0	0
	73.8%	18%	8.2%	0%	0%
ConValmet	43	12	4	2	0
	70.5%	19.7%	6.6%	3.3%	0%
LVExtmet	40	12	7	1	1
	65.6%	19.7%	11.5%	1.6%	1.6%
DCFmet	40	13	6	2	0
	65.6%	21.3%	9.8%	3.3%	0%
HPMet	48	8	4	1	0
	78.7%	13.1%	6.6%	1.6%	0%

Source: Field Data (2013)

5.3.1. Use of Comparable Sale Method (CompSal):

In the analysis, when asked how frequently comparable sales method was used, 48% representing 29 respondents, stated that they never use the method; 21% (13) said they use it occasionally; 16% (10) said they use it almost every time; 12% (7) said they almost never use the method; while 3% (2) replied that they use the method every time. These responses are shown on Figure 5.4 below.

5.3.2. Use of Depreciated Replacement Cost Method (DepRep):

When asked about the frequency of use of the Depreciated Replacement Cost method (DRC), 35% (21) stated that they never use DRC method in their practice. 28% (17) stated that occasionally use it, 16% (10) stated that they use it every time, 13% (8) stated that they use it almost every time, while only 8% (5) stated that they almost never used the method at all. The responses are shown in Figure 5.4 below.

Use of Predetermined Compensation Rates (PreRate):

On the use of Pre-Determined Compensation Rates, 52% (32) said that they use the method almost every time they value land that is to be compulsorily acquired, 20% (12) said they use it every time, 10%(6) said that they never use the method at all, 10%(6) also said that they use it almost every time, while only 8%(5) they almost never use the method. These are shown in Figure 5.4 below.

5.3.3. Use of Income Capitalisation (Incmet):

On the use of the Income Capitalisation 47% (29) stated that they never used the method, 23% (14) stated that they almost never use the income capitalisation method, 18%(6) said they use the method occasionally, 10%(11) said that they use the method almost every time, while 2% (1) said that they use it every time to value properties that are to be compulsorily acquired. These responses are shown in Figure 5.4 below.

5.3.4. Use of Sub-division Method (Subdivmet):

When asked how frequently they use the Subdivision Method of valuation, 74% representing 45 respondents stated that they never use this method of valuation, 18% representing 11 respondents stated that they almost never use the subdivision method of valuation, while 8% representing 5 respondents said they occasionally use the method. No respondent responded to say whether they have used the method almost every time or every time. These responses are shown graphically in Figure 5.4 below.

5.3.5. Use of Contingent Valuation Method (ConValmet):

On the use of the Contingent Valuation Method, 70% representing 43 respondents stated that they have never used this method, 20% representing 12 respondents said that they almost never used the method, 7% (4) said they occasionally use the method, while only 3% said they use the method almost every time. None of the respondents said they use the method every time, as shown in Figure 5.4 below.

5.3.6. Land Value Extraction Method (LVExtmet):

In responding to the use of the Land Value Extraction Method, 65% representing 40 respondents stated that they have never used the method, 20% representing 12 respondents said they almost have never used the method, 11% representing 7 respondents said they occasionally use the method, while 2% representing 1 respondent said they use the method almost every time and every time respectively as shown in Table 5.4 above.

5.3.7. Discounted Cash Flow Method (DCFmet):

On the use of the Discounted Cash Flow Method of Valuation, 66% representing 40 respondents indicated that they never use this method of valuation, 21% representing 13 respondents indicated that they almost never use the method, 10% representing 6 indicated that they occasionally use the method, while only 3% representing 2 respondents said they use it almost every time. None of the respondents stated that they use the method every time as shown in Table 5.4 above.

5.3.8. Use of Hedonic Pricing Method (HPmet):

For Hedonic Price Modelling Method, 48 respondents representing 79% stated that they have Never used this method before, 8 respondents representing 13% stated that they almost never have used the method, 4 respondents representing 6% occasionally use the method, while 1 respondent representing a single person or 2% stated that they almost every time use the method. None of the respondents have ever used the method every time. These are shown on Table 5.4 above.

Figure 5.4 shows a graphical representation of all the responses.
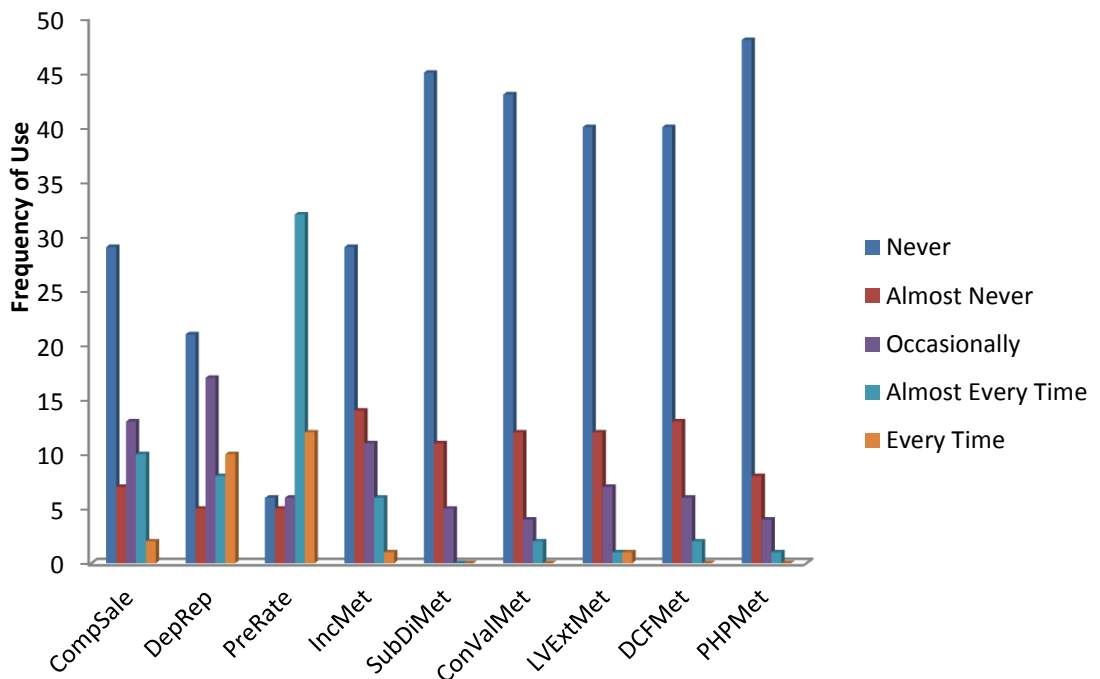
Figure 5.4 Frequency of Use of Valuation Methods

Source: Field Data (2013)

Since all the methods can be used independently of the others, there is the need to ascertain which method is most frequently used for compulsory acquisition valuations. To be able to rank the methods, all the responses are divided into two broad categories of "Never" and "Every Time", resulting in the frequency table shown in Table 5.3 and the frequency histogram shown as Figure 5.5.

Table 5.2: Frequency of Use of Valuation Methods

Valuation Method	Never	Every Time	Rank
Comparable Sales	36	25	3rd
Depreciated Replacement Cost	26	35	2nd
Pre-Determined Compensation Rates	11	50	1st
Income Capitalisation	43	18	4th
Subdivision Development	56	5	8th
Land Value Extraction	65	6	7th
Discounted Cash Flow	52	9	5th
Contingent Valuation	53	8	6th
Hedonic Pricing Model	56	5	8th

Source: Field Data (2013)
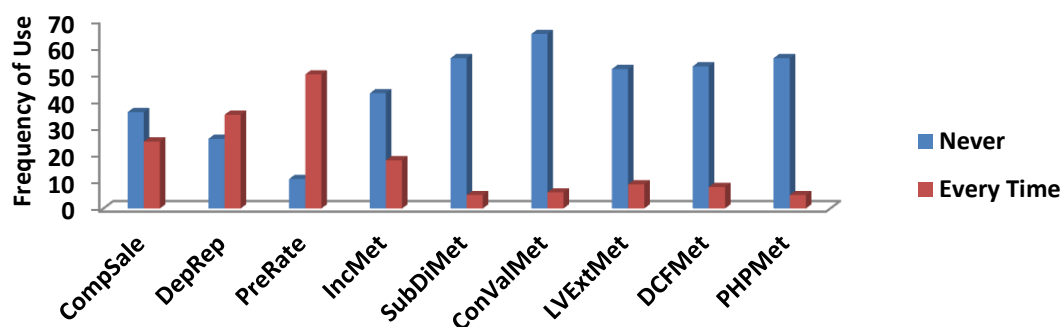
Figure 5.5 Combined Frequency of Use of Valuation Methods

Source: Field Data (2013)

From the ranking table it is obvious that the respondents ranked the use of pre-determined compensation rates highest, followed by the depreciated replacement cost method, then the comparable sales method. Both the subdivision development and the hedonic pricing model methods appear never to have been used by the respondent valuers in the Niger Delta. To ascertain the relationship between compulsory acquisition values and the selected valuation methods ranked 1st to 3rd, the Spearman rho was determined. The

relationship between the value sought in a compulsory acquisition valuation and the Comparable Sales Valuation method was r = .02, the relationship with the Depreciated Replacement Cost Valuation method was negative with r = .23, and the relationship with the Pre-Determined Compensation Rates method was negative with r =.00, all n = 61,

p < .0005. This result showed that the relationship was week following Cohen (1988, pp. 79-81) cited in Pallant (2007, p. 132) where the guide is as follows:

small	r = .10 to .29
medium	r = .30 to .49
large	r = .50 to 1.0

The only significant correlation here is the relationship with the pre-determined compensation rates method where r = .00 (p < .0005), which indicates that there is a strong relationship between the values sought in a compulsory acquisition and the use of this method of valuation and confirms the findings of Ogedemgbe, Otegbulu, and Kakulu.

5.4. Influence of Law in Selecting a Valuation Method:

Since the origin of the use of the pre-determined compensation rate is the statutory provisions of the Land Use Act, it is necessary to examine the influence of Law in the choice of valuation methods before considering the response of the expert valuers interviewed. To do this, the respondent valuers were asked to indicate the influence of the Law in the choice of valuation method when agricultural land is to be compulsorily acquired. Figure 5.6 shows the influence of law in the choice of valuation methods.
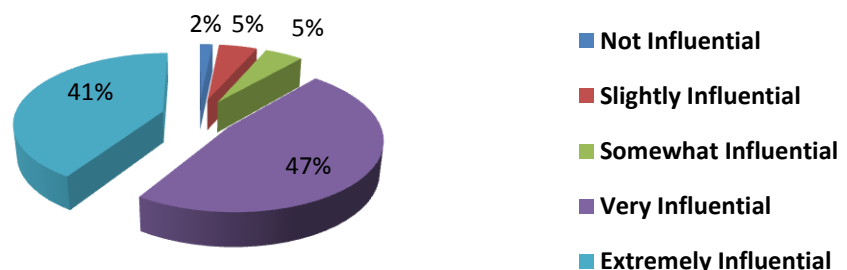
Figure 5.6: Influence of Law on the Choice of Valuation Method

Source: Field Data (2013)

This figure shows that 41% representing 29 respondents said that the law prescribing the compulsory acquisition of agricultural land influences the choice of the valuation method; 47% (25) said the law is very influential; 5% (3) said it was somewhat influential; 5% (3) said it was slightly influential; and only 2% (1) said it was not influential at all. Summarising these responses into two broad categories of "Not Influential" and "Extremely Influential" capture the magnitude of influence, but assuming those who said it was somewhat influential added to the extremely influential group, shows that a great majority (93%) representing 57 respondents actually said that the law was extremely important while only 7% representing 4 respondents said it was not influential. Figure 5.7 illustrates in a histogram, this result.
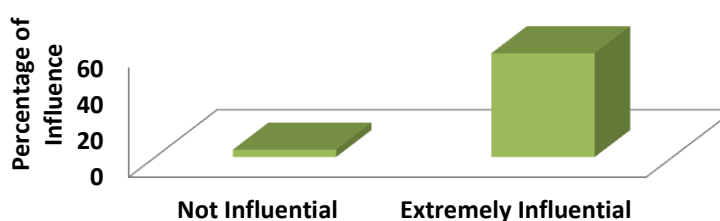
Figure 5.7: Summary of the Influence of Law on the Choice of Valuation Methods

Source: Field Data (2013)

Comparing these findings to the result of the expert interviews where it was found that 92% representing 11 expert valuers stated that they adopt the method prescribed by the enabling statute authorising the compulsory acquisition and only 8% representing a single respondent said that he adopts the open market value while valuing for the compulsory acquisition of agricultural land, shows a uniformity of approach by the Niger Delta valuers. Most of the experts stated that any action emanating from a statutory provision must follow the provisions of the enabling law, to illustrate RESP3 stated that:

"Compulsory acquisition is statutory and the legal provisions limit the methods a valuer can use, hence the valuer must adopt the legally provided methods of valuation for such assignments like compulsory acquisition"

Also RESP5 stated thus:

"State laws dictate that only the depreciated replacement cost method should be used for structures and nothing is paid for land itself. Crops and economic trees are assessed on

the basis of rates determined by the State's Chief Lands Officer but such rates as they are, are arbitrarily determined."

Similarly RESP11stated that:

"Valuation for compulsory acquisition is statutory and the statutes guide the valuer in the determination of the compensation payable. Acquisitions are presently done under the Land Use Act which is very dictatorial as it determines the purpose, basis and methodology of valuation. The correct thing should be for the acquiring authority to determine the purpose while the valuer determines the basis and methodology based on his training. The LUA stipulates the adoption of the Depreciated Replacement Cost method of valuation for structures and rates prescribed by the appropriate officer for economic crops and trees (whatever these are)."

While trying to situate the valuation methods where they are used, RESP1 stated:

"Acquisition may be by Government or the IOCs. While the government requires the land for public purpose, the IOCs require land for their infrastructural provisions, both reasons being statutory. For government acquisitions the LUA provides the basis and method of valuation, but for the IOCs reference is made to the relevant statute for guidance though it is usually based on open market value basis."

Clearly, both the questionnaire respondents and the expert valuers interviewed appear to agree that the law is extremely influential by their responses as shown above. This result explains why valuers always adopt the pre-determined compensation rates for compulsory acquisition valuations as have been reported by several authors.

The adoption of the Pre-determined Compensation Rates as a preferred method of valuation while valuing statutorily, presupposes that the statute (LUA) prescribes any schedule of rates. The IOCs have also followed suit with their own prescribed rates known as the OPTS rates which they insist their consultant valuers should adopt when they acquire any land. This raises some questions of legality in the valuation practice. Firstly, a search through the LUA will not reveal any section that contains any schedule of compensation rates nor is there any section that provides any rates right from its promulgation as a decree. What it provides for is contained in Section 4 (a-c) thus:

> *"Compensation under subsection (1) of this section shall be, as respects-*
>
> > *a) The land, for an amount equal to the rent, if any, paid by the occupier during the year in which the right of occupancy was revoked;*

b) *Buildings, installations or improvements thereon, for the amount of the replacement cost of the building, installation or improvement, that is to say, such cost as may be assessed on the basis of the prescribed method of assessment as determined by the appropriate officer less any depreciation, together with interest at the bank rate for delayed payment of compensation and in respect of any improvements in the nature of reclamation works, being such cost thereof as may be substantiated by documentary evidence and proof to the satisfaction of the appropriate officer;*

c) *Crops on land apart from any building, installation or improvement thereon, for an amount equal to the value as prescribed and determined by the appropriate officer*"

The section cited above while providing for the depreciated replacement cost method to be used in valuing buildings, installations or improvements does not define the basis of replacement. It is not clear if the replacement is "new-for-old" or "old-for-old". To replace new-for-old means paying compensation that will enable the dispossessed rebuild a new building with similar utility to that being acquired whereas replacing old-for-old merely means paying for the building what will enable the dispossessed replace another building with the same utility as it is found on the acquired building on the date of valuation. Simple logic indicates that it will not be possible to replace an old building with another old building and this appears to be the result of applying a depreciated replacement cost to value any building. Practically, this means that the compensation resulting will not be able to place the recipient in the position he/she was prior to the acquisition which is a cardinal principle of compulsory acquisition. This inference is confirmed by RESP7 when he said that:

"The result of using the depreciated replacement cost method to value does not meet the aims of compulsory acquisition as the owners cannot replace the acquired property"

Where any statute prescribes a valuation method, the FAO (2008) stated that sustainable development requires governments to meet certain requirements like the principle of equivalence; the principle of balance of interests; the principle of flexibility; the principle of equal application to de facto and de jure interests; and the principle of fairness and transparency. Specifically, the principle of equivalence requires that people should receive compensation that is no more or no less than the loss resulting from the compulsory acquisition of their land. To value a building and then depreciate to determine

compensation invariably results in a value less than the loss suffered. Similarly, the definition of replacement cost falls short of the international standard as provided for in the Operational Manual of the World-Bank (2011)(OP 4.12, Annex A - Involuntary Resettlement Instruments, 2001, p. 7) which states thus:

"With regard to land and structures, "replacement cost" is defined as follows: For agricultural land, it is the pre-project or pre-displacement, whichever is higher, market value of land of equal productive potential or use located in the vicinity of the affected land, plus the cost of preparing the land to levels similar to those of the affected land, plus the cost of any registration and transfer taxes. For land in urban areas, it is the pre-displacement market value of land of equal size and use, with similar or improved public infrastructure facilities and services and located in the vicinity of the affected land, plus the cost of any registration and transfer taxes. For houses and other structures, it is the market cost of the materials to build a replacement structure with an area and quality similar to or better than those of the affected structure, or to repair a partially affected structure, plus the cost of transporting building materials to the construction site, plus the cost of any labour and contractors' fees, plus the cost of any registration and transfer taxes. In determining the replacement cost, depreciation of the asset and the value of salvage materials are not taken into account, nor is the value of benefits to be derived from the project deducted from the valuation of an affected asset. Where domestic law does not meet the standard of compensation at full replacement cost, compensation under domestic law is supplemented by additional measures so as to meet the replacement cost standard."

The adoption of pre-determined rates is a misinterpretation of the law which only requires the "appropriate officer" to prescribe a rate for any acquisition. This provision does not impose a uniform rate for payment on all compulsory acquisitions but implies that each case be treated on its merit. The present interpretation also means that no matter the location of the land and buildings, the same rate must apply hence the adoption of rates applicable in the six Geo-Political zones of Nigeria. This practice is inequitable as the Niger Delta terrain is such that no two communities have the same soil structure and therefore experience different building costs. A typical example is the difference in building costs between Port Harcourt Urban and Bonny City that is completely an island with very high water table and can only be reached by water or air transport. These

observations are graver when it is realised that the rates are hardly reviewed as the present rate was fixed in 2002.

For economic crops and trees, the prescribed rates classifies them as mature, medium and seedlings, with the values decreasing from mature to seedlings. This is confirmed by RESP3 when he said:

"The recommendation of rates is defective and lopsided as economic trees considered as 'matured' are assigned maximum value while immature trees and seedlings are assigned less value. Each ought to be valued to determine yield…."

Ordinarily it would have been thought that the seedlings should possess a higher value as it is likely going to yield more than the matured ones that have been producing for some time. It is not clear how the rates were determined as they bear no resemblance to the market prices of the crops and trees. Some economic trees yield for years before aging so to just pay a year's value is an under payment. While policy makers are comfortable with the result of adopting this method, it results in frequent rejection of the values determined and results in frequent controversies with government valuers being accused of defrauding the land owners.

5.4.1. Implications of Using the Valuation Methods:

Professionally, where the law determines the purpose, basis, and methodology of valuation, it discredits the professionalism of the valuer. By definition, valuation is a valuer's opinion of the value of a particular interest on a given date for a specified purpose. According to Dent and Sims (2013) in   Bond et al. (2013) citing IVSC (2011) and RICS (2012), the valuation process requires the valuer to make impartial judgements as to the reliance given to different factual data or assumptions in arriving at a conclusion. The data refers here to both the quantitative and qualitative data normally collected by the valuer during inspection of the subject property. The IVSC (2013) and RICS (2012) requires that credible valuations must promote transparency and minimise the influence of any subjective factors on the process, but by adopting pre-determined rates as a method of valuation, it is assumed that no data or assumptions were made in determining value which is not only unprofessional but questions the credibility of the valuation process followed and contrary to the appraisal process followed by professionals as set out by the Appraisal Institute (2008, pp. 129-136) and the IVSC (2007). Similarly reducing valuation to a mere mathematical process of multiplying the quantity of any property by a given unit rate, and reduces valuation to a spreadsheet calculation and transforms property value to a fact

rather than an estimate (Dent and Sims, 2013), and excludes the qualitative interpretation of property and market features that influence value, which market participants usually consider. This approach also opens the practice of valuing for compensation arising from compulsory acquisition to non-professionals who can easily multiply the quantity of any property by the unit rates provided in the schedule of pre-determined rates and renders the patronage of practicing valuers by land owners, unnecessary when their land is to be compulsorily acquired as they cannot see any professional input by the valuer they retain since the acquiring authorities' valuation will be exactly the same with that of landowners' valuer since both valuers will work with the same facts. If this practice is not checked, it might lead eventually to the extinction of valuation retainer ship practice in compulsory acquisition claims. It follows that the present method will not ensure sustainability of valuation practice.

To the landowners, the adoption of pre-determined rates leads to the payment of inadequate compensation that cannot even replace the acquired building. This portrays the government and the IOCs as exploitative and dictatorial and leads to hostility and project delays as landowners contrive every possible approach to frustrate any acquisition. Most acquisitions are geared to improving the environment by providing basic infrastructures or developing an economic venture like drilling of crude petroleum oil. Where these are done at the expense of the land owners who become homeless because the compensation paid cannot replace their homes, the developmental projects become liable to sabotage as the land owners feel exploited and marginalised.

5.5. Valuing Contaminated Agricultural Land:

To further confirm whether the same method of valuation was applicable to the valuation undertaken to assess damages on contaminated agricultural land, valuers were given the same list of valuation methods and asked to confirm which method is frequently used. In the resultant table, the following legend was used:

Comparable Sale Method (ComSalcont); Depreciated Replacement Cost Method (DepRepcont); Use of Pre-determined Compensation Rates (PreRatecont); Income Capitalisation Method (Incmetcont); Subdivision Development Valuation Method (SDmetcont); Land Value Extraction Method (LVExtcont); Discounted Cash Flow Technique (DCFcont); Contingent Valuation Method (Convalcont); and Hedonic Pricing Model (HPMcont).

In their response, 38% representing 23 respondents said they have never used the comparative sales method of valuation;

Table 5.3: Frequency of Use of Valuation Methods in Valuing Contaminated Land

	Never	Rarely	Sometimes	Often	Always
ComSalcont	23	9	8	14	7
	37.70%	14.80%	13.10%	23%	11.50%
DepRepcont	22	5	17	8	9
	36.10%	8%	27.90%	13.10%	14.80%
PreRatecont	13	7	12	16	13
	21.30%	11.50%	19.70%	26.20%	21.30%
Incmetcont	22	8	13	15	3
	36.10%	13.10%	21.30%	24.60%	4.90%
SDmetcont	40	15	4	2	0
	65.60%	24.60%	6.60%	3.30%	0%
LVExtcont	36	14	10	1	0
	59%	23%	16.40%	1.60%	0%
DCFcont	39	11	8	3	0
	63.90%	18%	13.10%	4.90%	0%
Convalcont	44	8	6	2	1
	72.10%	13.10%	9.80%	3.30%	1.60%
HPMcont	48	11	2	0	0
	78.70%	18%	3.30%	0%	0%

Source: Field Data (2013)

23% (14) said they very often use the comparative sales method; 15% (9) said they rarely use the method; 13% (8) said they sometimes use the method; while 11% (7) said they always use the method. These responses are shown in Table 5.3 above. Similarly, 36% (22) stated that they never use the depreciated replacement cost method to value contaminated land; 28% (17) said they sometimes use the method; 15% (9) said they always use the method; 13% (8) stated that they often use the method; while 8% (5) said they rarely use the method to value contaminated land as shown in Table 5.3 above.

In the same way 26% (16) said they often use the pre-determined compensation rate method of valuation to value contaminated land; 21% (13) said they always use this method; anther 21% (13) also said they never use the method; 20% (12) said they sometimes use it; while only 12 %(7) said that they rarely use the method as shown in Table 5.3 above. Likewise 36% (22) said that in valuing contaminated land, they never use the income capitalisation method; 25% (15) said that they often use this method; 21% (13)

said they sometimes use this method; 13% (8) said they rarely use this method; while 5% (3) stated that they always use the method, as shown in Table 5.3 above.

Similarly 40 respondents (66%) stated that they have never used the subdivision development valuation method to value contaminated land. 15 respondents (25%) said they rarely use the method; 4 respondents (6%) said they sometimes use this method; while 2 respondents (3%) said they often use this method. No respondent stated that they always use the method as shown in Table 5.3 above.

On the use of the Land Value Extraction method of valuation, 36 respondents representing 59% said they never use this method; 14 respondents (23%) said they rarely use this method; 10 respondents (16%) said the sometimes use the method; while only 1 respondents representing 2% said they often use the method. No respondent stated that they always use this method as shown in Table 5.3 above.

For the use of the Discounted Cash Flow technique, 64% representing 39 respondents stated that they never use this method to value contaminated land; 18% (11) said they rarely use this method; 13% (8) said they sometimes use the method; while 5% (3) stated that they often use the method. No respondent indicated always using the method a shown in Table 5.3 above.

Also valuers were asked the frequency of use of the contingent valuation method and 44 respondents (72%) said they never use the method; 8 (13%) said they rarely use the method; 6 (10%) said they sometimes use the method 2 (3%) said they often use the method; while only 1 (2%) said they often use the method as shown in Table 5.3 above.

Finally they were asked about the use of the Hedonic Pricing Model and 79% representing 48 respondents stated that they never use this method of valuation; 18% (11) said they rarely use this method; while only 3% (2) said they sometimes use this method. No respondent stated weather they often or always use the method of valuation.

To be able to summarise these responses and identify the main valuation method being used, the response frequencies are ranked using the Relative Importance Index (RII) suggested by Lim and Alum (1995) as follows:

Table 5.4 Ranking of Valuation Methods

Valuation Method	Never	Rarely	Some-times	Often	Always	RII	Rank
Comparable Sale Method	23	9	8	14	7	0.51	3rd
Depreciated Replacement Cost Method	22	5	17	8	9	0.52	2nd
Use of Pre-determined Compensation Rates	13	7	12	16	13	0.629	1st
Income Capitalisation Method	22	8	13	15	3	0.498	4th
Subdivision Development Valuation Method	40	15	4	2	0	0.295	8th
Land Value Extraction Method	36	14	10	1	0	0.32	5th
Discounted Cash Flow Technique	39	11	8	3	0	0.318	6th
Contingent Valuation Method	44	8	6	2	1	0.298	7th
Hedonic Pricing Model	48	11	2	0	0	0.249	9th

Source: Author' Questionnaire (2013)

From the above table, it is obvious that the respondent valuers generally adopt the pre-determined compensation rates as a valuation method of choice, while valuing contaminated land. However the expert valuers interviewed, responded differently as 75% representing 9 experts, stated that they adopt the investment method of valuation; 25% representing 3 experts said they use the comparative sales method. In addition to these, two respondents indicated that they complemented their valuations if necessary with the Human Capital approach.

It is remarkable to note that the questionnaire respondents only chose the Income Capitalisation method as a 4th choice. When RESP1 was asked which method of valuation was used in valuing contaminated land he responded thus:

"For any land contaminated by oil pollution we adopt the investment method of valuation and complement it with the human capital approach to value lost earnings."

RESP2 on his own stated that:

"Compensation for contamination is aimed at restoring the land owner to his original state of welfare prior to the contamination. We usually determine the total income lost from all the economic resources impacted on the land for instance the loss of income from trees from their use as firewood, building, etc. we also add the estimated income lost as a

result of the psychological impact of the discovery of contamination and any proven health hazard through our the recovery period of the loss of use of the land."

RESP4 stated thus:

"We examine economic crops impacted and the open market value taking cognisance of the duration of the effect of the contamination."

While RESP5 said that:

"For crops and trees and structures, we adopt the income approach to arrive at the open market value." and

RESP12 was more explicit when he stated that:

"In valuing contaminated land we adopt the investment method. In valuing a galloping swamp for instance, we collected the income stream from fishermen for the last three years and average it and determining the loss by comparing the income before and after."

While trying to confirm the veracity of the interview responses, the interviewees were asked why they opted for the investment method of valuation rather than use the pre-determined compensation rates. Their responses was summarised by RESP2 when he stated thus:

"The OPTS rates were previously used for contamination valuations but these rates are now outdated and no more reliable for the IOCs. Even the government rates vary between States on the one hand and between the States and the Federal Government on the other hand, and the rates are also outdated. Also there has been controversies with regards the definition of who is the "Appropriate Officer" under the LUA, whether it means a Valuer in Government or in private professional Service, thus it is not clear whom the law expects to determine rates that should be used for any particular project. In the midst of all these, it becomes preferable to adopt market prices".

This view was supported by RESP3 who stated thus:

"The use of prescribed rates is strange as the rates were determined by either the Governments or the IOCs without any input from property owners. To say that the OPTS rates are better than the government rates does not make them acceptable as they are obsolete and are generally inadequate value indicators."

The practice of the expert interviewees is borne out of their years of professional practice and seems to be informed by their exposure to the market and conforms to the Swedish

practice where 82% of valuers also use the income approach and 82% use the comparable sales approach, as reported by Antai (2003), while the questionnaire respondents as shown in Table 5.4 appear to have limited experiences in valuing contaminated properties and thus depend on dictated methods of valuation due to the absence of any professional standard of practice guideline. From the results of the analysis, both the questionnaire responses and the expert interviews appear to disagree on the best method of valuation that should be adopted to value contaminated land. This controversy may be due to the lack of general appreciation of the peculiarity of contaminated land valuation and the infancy of the valuation methods as stated by Patchin (1988) when he said that contamination issues are just coming to the fore among lawyers and valuers, while commenting on the United States' experience. The findings reveal the absence of any professional standard of valuation practice existing in Nigeria generally and the Niger Delta in particular. As will be shown later, neither the regulatory body (ESVARBON) nor the professional body (NIESV) has stipulated any standard procedure to be followed in valuing contaminated land, unlike the RICS, USPAP and IAAO guidance notes. Another reason for the variation of practice is the wrongly held view by some professional valuers that since oil spillages which are the major causes of contamination emanate from the operations of the IOCs and the operating IOCs are in joint partnership with the Nigerian Government through their Joint-Venture agreements, the resulting contamination should be considered as an act of Government and should be valued on the same basis as a government acquisition. The truth is that the IOCs are business enterprises whose business operations result in the externality of contamination which cause damages to third parties when they occur, and therefore should pay for damages caused as practiced in other market-dependent economies under the "Polluter Pays Principle". This "Polluter Pays Principle" according to Lucia 2013) is an environmental policy principle requiring the costs of pollution to be borne by the polluter, and has been established since 1972 by the Organisation for Economic Co-operation and Development (OECD), and reaffirmed in the 1992 Rio Declaration, Principle 16 which stated that "National authorities should endeavour to promote the internalisation of environmental costs and use of economic instruments, taking into account the approach that the polluter should, in principle, bear the cost of pollution, with due regard to the public interest and without distorting international trade and investment." Okenabirhie (2009) contended, that this principle is not applied in Nigeria by the IOCs and that the Government is lax in enforcing it due to its dependence on the earnings from the oil produced by them.

Though the experience of the expert interviewees suggests the use of the investment method (practically the income capitalisation approach), it is not very clear how the inputs into the method are derived since there is no market for contaminated properties from which comparable data could be drawn from. Sheard (1993) had stated that to assess an open market value such as the investment method seeks, there must be an open market in the kind of asset being valued and this means there will be agreement on what is an accepted practice in the market. The divergence of approaches as reported above indicates there is no consensus on the standard valuation approach that should be adopted and this according to Sheard (1993) is indicative of the absence of any market evidence as confirmed by Babawale (2013) but as Alperin (2000) has stated, the quality and effectiveness of every valuation depends on the availability and accuracy of market data. This means that the current practice whether predetermined compensation rates or investment methods are used will only produce values that are questionable.

5.6. Contaminated Wetlands Valuation:

Having determined the valuation method of choice among valuers and shown that there is no relationship between the methods being used and the value sought in a compulsory acquisition and contamination damage assessments, it now becomes necessary to ascertain the valuation method used in the valuation of contaminated wetlands and the factors influencing the choice of methods, as this is the main focus of this study. The next section will start by examining the goods and services that are considered important in wetland valuations.

5.6.1. Categories of Ecosystem Goods and Services:

Valuers were asked to indicate how important some selected wetland goods and services are in the valuation of wetlands. As stated in section 3.12 wetlands provide certain categories of ecosystem services like Provisioning; Regulating; Cultural; and Supporting services. Table 5.2 summarises the items selected under each category for the following analysis, while Table 5.3 shows the importance of each selected item as stated by the questionnaire respondents. In Table 5.3 and the accompanying graph, Not Important (NI); Slightly Important (SI); Neutral (N); Moderately Important (MI); Extremely Important (EI).

Table 5.2: Categories of Ecosystem Goods and Services

Provisioning Services	Regulating Services	Cultural Services	Supporting Services
Fish and Fish Nursery	Flood Control	Recreation	Ground water recharge and Supply.
Non Timber Forest Products	Storm Protection	Cultural Heritage	
Agricultural Goods	Shoreline Stabilisation	Bequest	
Timber	Ecosystem Support		
Fuel Wood	Biodiversity		
Wild Life	Water Purification		
Transport			

Source: Adapted from Department for Environment, Food and Rural Affairs (2007, p. 11)

5.6.1.1. Importance for Fish and Fish-Nursery:

An analysis of the questionnaire shows in Figure 23 that 75% (46) of the respondents regard the use for harvesting of fish and as a fish nursery as being extremely important in wetland valuations; 10% (6) said it is not at all important; 7% (4) said it was moderately important; 5% (3) were neutral; and 3% (2) said it was slightly important. On the average, it could be said that majority of the respondents i. e.87% (53) said that fish and fish nursery were extremely important while only a minority of 8 (13%) felt it was not important.

5.6.1.2. Importance for NTFPs:

For Non Timber Forest Products (NTFPs), 57% representing 35 respondents said that it was extremely important; 20% (12) were neutral; 10% (6) said it was moderately important; 2% (1) said it was slightly important; while 11% (7) said it was not important at all. This averages 87% (53) considering it extremely important and 13% (8) saying it was not important at all. Perhaps the high percentage of neural respondents is due to non-appreciation of the nature of NTFPs by most respondent valuers.

5.6.1.3. Importance for Agriculture:

The use of wetlands for agriculture was considered by 62% (38) respondents as being extremely important; 25% (15) as being moderately important; 5% (3) said it was slightly important; similarly 5% (3) said it was not important at all while 3% (2) were neutral.

When taken together, 90% (55) stated that wetlands were useful for agricultural use, while only 10% (6) said it was not important at all.

Table 5.3: Importance of Wetlands Goods and Services

	FFNurs	NTFP	Agric	Timber	Fuel-Wood	Wild-Life	Transp	Recrea	Nut-Ret	Flood Cont	Storm-Protec	Shore-Protec	Water Rech	Eco-Syst	Bio-diverst	CulHer	Be-quest
N/I	6	7	3	7	11	7	14	11	10	10	14	9	8	11	6	6	9
SI	2	1	3	4	5	7	8	10	10	9	8	10	5	7	5	10	10
N	3	12	2	3	4	7	9	11	6	6	7	8	11	11	12	10	18
MI	4	6	15	10	21	14	20	15	19	16	17	15	17	11	12	18	14
EI	46	35	38	37	20	26	6	14	16	20	15	19	20	21	26	17	10

Source: Field Data (2013)
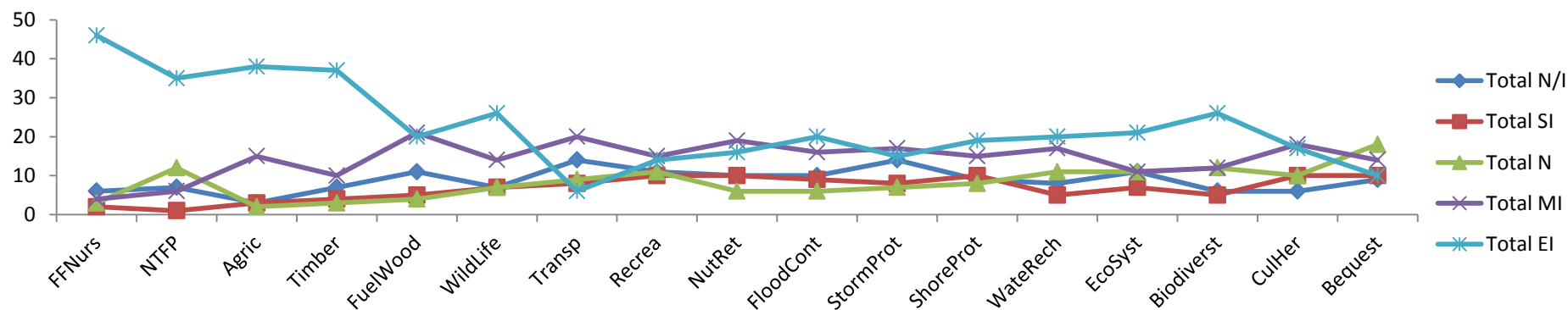
Figure 5.8: Importance of Wetland Goods and Services as Indicated by Responses

Source: Field Data (2013)

5.6.1.4. Importance for Timber:

Wetlands are a useful source of timber for construction of buildings as shown in Figure 5.8 where 61% (37) said it was extremely important in valuations; 16% (10) said it was moderately important; 5% (3) said they were neutral; 7% (4) said it was slightly important; and 12% (7) said it was not important at all.

5.6.1.5. Importance for Gathering Fuel Wood:

Another use is for gathering of fuel wood and as shown in Figure 5.8, where 34 %(21) said wetlands were moderately important as a source of fuel wood in valuations; 33% (20) said they were extremely important; 18% (11) said they were not important at all; 8% (5) said they were slightly important and 7% (4) were neutral. Aggregating all indicates that 74% (45) confirmed they were extremely important while 26% (16) said they were not important. This result confirms the dependence of the natives of the Niger Delta on sea foods as a source of protein and income for the gatherers.

5.6.1.6. Importance of Wildlife Use:

Wetlands use as a source of wildlife was also examined and the results are as shown in Figure 5.8 above. From the responses shown, 43% representing 26 respondents stated that wildlife gathering was considered to be extremely important in wetland valuations; 23% (14) said it was moderately important; 11% (7) were neutral and did not know its exact importance; 11% (7) said it was slightly important; and another 12% (7) said it was not important at all. Aggregating the results indicates that while 77% said it is extremely important, only 23% said it is not important at all. This result confirms the use as a source of game which natives of the Niger Delta frequently resort to, to supplement their incomes and as a source of protein. The neutral response must have come from valuers who rarely visit the wetlands for fear of water and so cannot recall what exists in the environment.

5.6.1.7. Importance of Transport Use

The use of wetlands as a means of transport of both man and resources was examined and the result showed that only 34% representing 20 respondents said it was moderately important; 15% (9) said it was extremely important; 15% (9) also said they were neutral; 13% (8) said it was slightly important; and 23% (14) said it was not important at all. When combined, this shows 62% saying it is extremely important and 38% saying it is not important at all. These are shown in Table 5.3 above.

5.6.1.8. Importance for Recreation Use:

Wetlands use for recreation was examined and it was found that while 23% (14) said it was extremely important for use for recreation purposes; 25% (15) said it was moderately important; 18% (11) were neutral; 16% (10) said it was slightly important; and 18% said it was not important at all. A combination into two groups indicates that 66% considered it extremely important, while 34% considered it not important at all. Figure 5.8 shows these results. The high neutral response shows the lack of appreciation of the public use of wetlands and the absence of any appreciation of the natural endowments of the Niger Delta environment.

5.6.1.9. Importance for Wetland use for Nutrient Retention:

Wetlands use for nutrient retention was considered and it was found that 26% (16) said it was extremely important; 31% (19) said it was moderately important; 10% (6) said they were neutral; 16% (10) said it was slightly important; and only 17% (10) said it was not important at all. A combination into two broad groups indicates that while 67% considered it important, 33% considered it not important. This result is understandable as it is not very easy to confirm use for nutrient retention without any scientific proof; hence the responses appear to be evenly spread. Table 5.3 shows the results.

5.6.1.10. Importance of Wetland use for Flood Control

Wetlands are also used for flood control and the results indicate that 33% (20) said it is extremely important for this use; 26% (16) said it was moderately important; 10% (6) were neutral; 15% (9) said it was slightly important; and 16% (10) said it was not important at all. Grouping these results indicates that majority 69% considered it important while 31% considered it not important. While the nature of the tree roots in the Niger Delta appears porous, the combination of the roots and the mud flat provides a barrier against flood thus the results appear justified. It is not very obvious why any valuer will say the wetlands are not important as a flood barrier Table 5.3 shows the results.

5.6.1.11. Importance for Storm Protection:

Figure 5.9 shows the results of the responses on the importance of wetlands as being used for storm protection. 25% (15) said it was extremely important for use for storm protection; 28% (17) said it was moderately important; 11% (7) were neutral; 13% (8) said it was slightly important; and 23% (8) felt it was not important at all. When combined broadly, 36% considered it not important, indicating that a reasonable percentage did not

accept storm control as a function of wetlands, contrary to the report of Millennium Ecosystem (MA, 2005) and other authors. Though a majority of 64% considered it important for flood protection the result appears not to reflect the true nature of the Niger Delta environment.
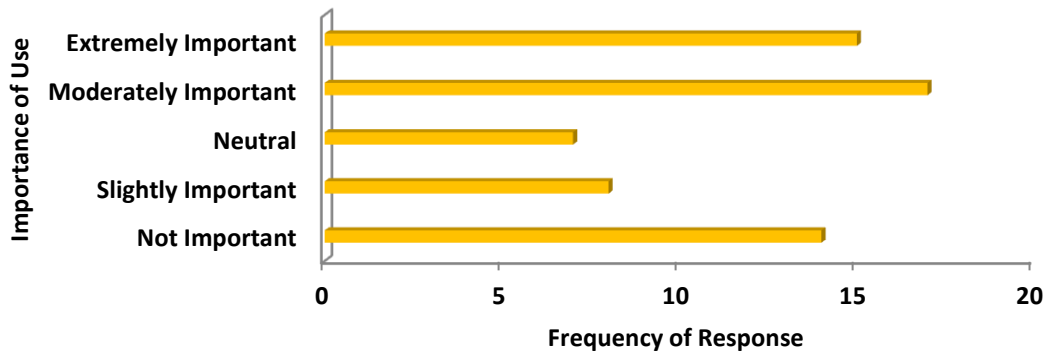
Figure 5.9: Importance of Wetland use for Storm Protection
Source: Field Data (2013)

5.6.1.12. Importance of Wetland use for Shoreline Stabilisation:

Respondents also considered the use of wetlands for shoreline stabilisation and 31% (19) said it was extremely important; 25% (15) said it was moderately important; 13% (8) were neutral; 16% (10) said it was slightly important; and 15% (9) said it was not important at all. Grouped into two groups, shows that 69% considered it important while 31% considered it not important. This result indicates that though majority of valuers considered that wetlands serve the function of shoreline stabilisation, a reasonable percentage was not so convinced. The detailed results are shown in Figure 5.9 above.

5.6.1.13. Importance of Wetland use for Ground Water Recharge/Supply

When asked the importance of wetland use for ground water recharge/water supply, 33% (20) said it was extremely important; 28% (17) said it was moderately important; 18% (11) were neutral; 8% (5) said it was slightly important; and 13% (8) said it was not important at all. When combined, this shows a majority of 79% saying that it was important and only 21% saying it was not important. These are captured in Figure 5.8 above. This result confirms that the respondents appreciate the water purification importance of wetlands in the Niger Delta and confirmed by both the Wetlands Institute (2013) and de Groot et al. (2006).

5.6.1.14. Importance of Wetlands in Ecosystem Support:

Wetlands are said to support the ecosystem generally (De Groot et al, 2006). When asked how important the Niger Delta wetlands are in supporting the external ecosystem, Figure 5.10 below shows that 34% (21) confirmed that it was extremely important; 18% (11) said it was moderately important; 18% (11) were neutral; 12% (7) said it was slightly important; and 18% (11) said it was not important at all.
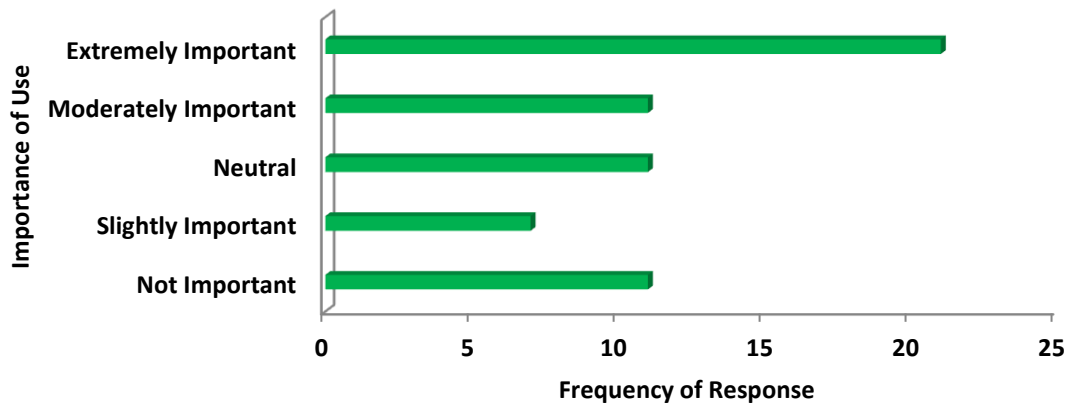
Figure 5.10: Importance of Wetlands in Ecosystem Support

Source: Field Data (2013)

Combining these responses into two groups only, indicates that majority valuers 70% considered wetlands to be extremely important for supporting the ecosystem, while only 30% felt it was not important at all. This means that valuers should reflect the value of the ecosystem in their valuations to determine damages due to contamination and raises the question whether valuers by their present training are well equipped to value the ecosystem. It is difficult to reconcile the response showing the importance as supporting the external ecosystem with the preferred method of valuation adopted to determine damages due to contamination as there is no predetermined compensation rate for the ecosystem. This notwithstanding, the acceptance of wetlands as being extremely important in supporting the ecosystem thus creates an enabling environment for the determination of the total economic value of any degraded wetland.

5.6.1.15. Importance of Wetlands in Sustaining Biodiversity:

Respondents were also asked about the importance of wetlands in biodiversity preservation and their responses are shown in Figure 5.8, 37.42% of the respondents

representing 26 respondents said that biodiversity was extremely important in sustaining and preserving biodiversity; 20% (12) said it was moderately important; another 20% (12) were neutral, not knowing which way to respond; 8% (5) said it was slightly important; and 10% (6) said it was not important at all. When all the responses are combined, a total of 82% considered it important while 18% considered it not to be important. This result shows an appreciation of the different roles wetlands play in the ecosystem though the percentage of those who were neutral indicates non-committal to the purpose of biodiversity preservation.

That a large percentage considered it important confirms the findings of Brander et al. (2006a) where it was reported that the biodiversity value of wetlands is higher than the value for any other service, stressing the importance of this use. A review of the compensation rates in use in the Niger Delta shows that no provision is made for biodiversity as a payment sub-head.

5.6.1.16. Importance of Wetlands for Provision of Cultural/Heritage Services:

Since the Millennium Ecosystem Assessment (MA, 2005) identifies cultural services as one of the functions of ecosystems like wetlands, respondents were asked to select how important it is for wetlands to provide cultural/heritage functions. Figure 38 shows their responses.

In their response, 28% (17) said it was extremely important; 30% (18) said it was moderately important; 16% (10) were neutral; another 16% (10) also said it was slightly important; and only 10% (6) said it was not important at all. When grouped into two, 74% considered it extremely important and only 26% considered it be impracticable and not important all. The result reveals an acceptance of the fact that wetlands possess some value for the culture and heritage of the Niger Delta inhabitants, but raises the question of how these are reflected in the valuation methods adopted by valuers in their valuations. The valuation of valuers hardly incorporates cultural and heritage values as the traditional valuation approaches do not accommodate these values since they are hardly traded in the market. This calls for an alternative valuation method which will be flexible enough to capture such values, while determining damages due to contamination.

5.6.1.17. Importance of Wetlands Bequest Value:

The final function of wetland identified was its bequest value. Figure 5.8 shows the various responses to the question about the importance of this function in wetlands

valuation. In their response, 16% (10) said it was extremely important; 23% (14) said it was moderately important; 30% (18) were neutral; 16% (10) said it was slightly important; and 15% (9) said t was not important at all. The high proportion of neutral respondents implies a non-appreciation of what Bequest value is and though if grouped into two groups, a significant percentage of 69% would be deemed to consider it important while 31% would be deemed to consider it not important. It is not apparent that valuers can capture this value with the conventional approaches to value, thus there is need to adopt a more robust approach if they are to be reflected in the determination of damages.

To determine the most important good or service that is considered in valuing wetlands the various responses above are combined and the Relative Importance Index (RII) determined and shown in Table 5.4 below. The RII indicates the level of valuers' perception about the particular factor of concern (Lin E. and Alum J, 1995). To determine the RII, questionnaire respondents were asked to rank their answers in terms of 'Not at all Important', 'Slightly Important'. 'Neutral', 'Moderately Important', and 'Extremely Important'. The results are shown in Table 5.4 and the RII was calculated for each good/service using the formula after ranking the items from 1 to 17:

$$RII = \frac{5N_1 + 4N_2 + 3N_3 + 2N_4 + N_5}{5(N_1 + N_2 + N_3 + N_4 + N_5)}$$

Where

N_1 = Number of respondents who answered 'extremely important';

N_2 = Number of respondents who answered 'moderately important';

N_3 = Number of respondents who answered 'neutral';

N_4 = Number of respondents who answered 'slightly important'; and

N_5 = Number of respondents who answered 'Not at all Important'.

Table 5.4: Relative Importance of Wetland Goods and Services

Goods/Services	Not at all Important	Slightly Important	Neutral	Moderately Important	Extremely Important	RII	Rank
Fish and Fish Nursery	6	2	3	46	46	0.86	2nd
Non Timber Forest Products	7	1	12	6	35	0.80	4th
Agriculture	3	3	2	15	38	0.87	1st
Timber	7	4	3	10	37	0.82	3rd
Fuel Wood	11	5	4	21	20	0.71	6th
Wild Life	7	7	7	14	26	0.75	5th
Transport	14	8	9	20	6	0.59	13th
Recreation	11	10	11	15	14	0.64	11th
Nutrient Retention	10	10	6	19	16	0.67	10th
Flood Control	10	9	6	16	20	0.69	8th
Storm Protection	14	8	7	17	15	0.64	11th
Shoreline Stabilisation	9	10	8	15	19	0.68	9th
Ground Water Recharge/Water Supply	8	5	11	17	20	0.72	5th
External Ecosystem Support	11	7	11	11	21	0.67	10th
Biodiversity	6	5	12	12	26	0.75	5th
Culture/Heritage	6	10	10	18	17	0.70	7th
Bequest Value	9	10	18	14	10	0.62	12th

Source: Field Data (2013)

From Table 5.4 above the five most important goods/services are Agriculture, Fish and Fish Nursery, Timber collection, Non-Timber Forest Product gathering, Wild Life hunting and Biodiversity preservation. The implication of this is that the respondent valuers consider this goods/service as the most important use of wetlands in the Niger Delta and supposedly reflect them in their valuations. It is difficult to reconcile this finding with the method of valuation adopted for valuing contaminated wetlands except where the income capitalisation method is used as revealed by the interviewees.

5.7. Incorporation of Goods and Services in the Valuation Method (Q. 11):

To ascertain whether the goods and services produced by wetlands are accommodated in the valuation of wetlands, respondents were asked to indicate the method of valuation they normally use to accommodate the goods and services obtainable from a wetland. The combined responses are shown in Figure 5.5 below.

5.7.1. Use of Comparative Methods of Valuation:

Analysing each method indicates that when considering Comparable Sales Method, 18% representing 11 respondents said they always use it; 30% (18) said they very often use it; 18% (11) said they sometimes use the method; 13% (8) said they rarely use the method; and 21% (13) said they never use it. These are shown in Figure 5.11. From this result, majority of the respondents 66% use the comparable sales method while 34% do not. Since this method underpins all other valuation methods (Wyatt, 2007, p. 122) it is surprising that so many respondents said they do not use this method of valuation even when there is no statute restricting the use of any particular method. It appears that the knowledge of wetland valuation is lacking hence the use of any method that may not be justified by economic reasons.

5.7.2. Use of Depreciated Replacement Cost Method of Valuation:

When asked about the Depreciated Replacement Cost method, 13% (8) said they always use this method; 31% (19) said they very often use it; 28% (13) said they sometimes use it; 13% (8) rarely use it; and 15% (9) never use it at all, as shown in Figure 5.5. A combination of the responses into two groups only indicates that as much as 72% always use this method while 28% do not use it. This result is difficult to justify except on the ground that valuers see wetlands as special purpose properties that are not easily marketable and therefore does not have comparable market evidence that will enable them use a market based method of valuation, hence they adopt the cost approach. Since the depreciated replacement cost approach is a method stipulated for use in valuing structures under the LUA, it can be inferred that valuers are influenced by the valuation methods used for compulsory acquisition as was the practice in America in the 1980s (Simons, 2005, P. 136). It is difficult to reconcile this result with the response to the use of the comparable sales approach as a larger percentage claimed to use. If wetlands are considered not to have comparable market evidence, where the valuers derive the comparable unit cost data is not very clear, unless they build this up from first principles.

Simon (2005, p. 139) opined that in the case of special-purpose, non-income-producing property, the cost method may be the only approach usable but it is the least useful approach to value since it relies least on market data and requires the use of assumptions by the valuer which are mostly untestable.
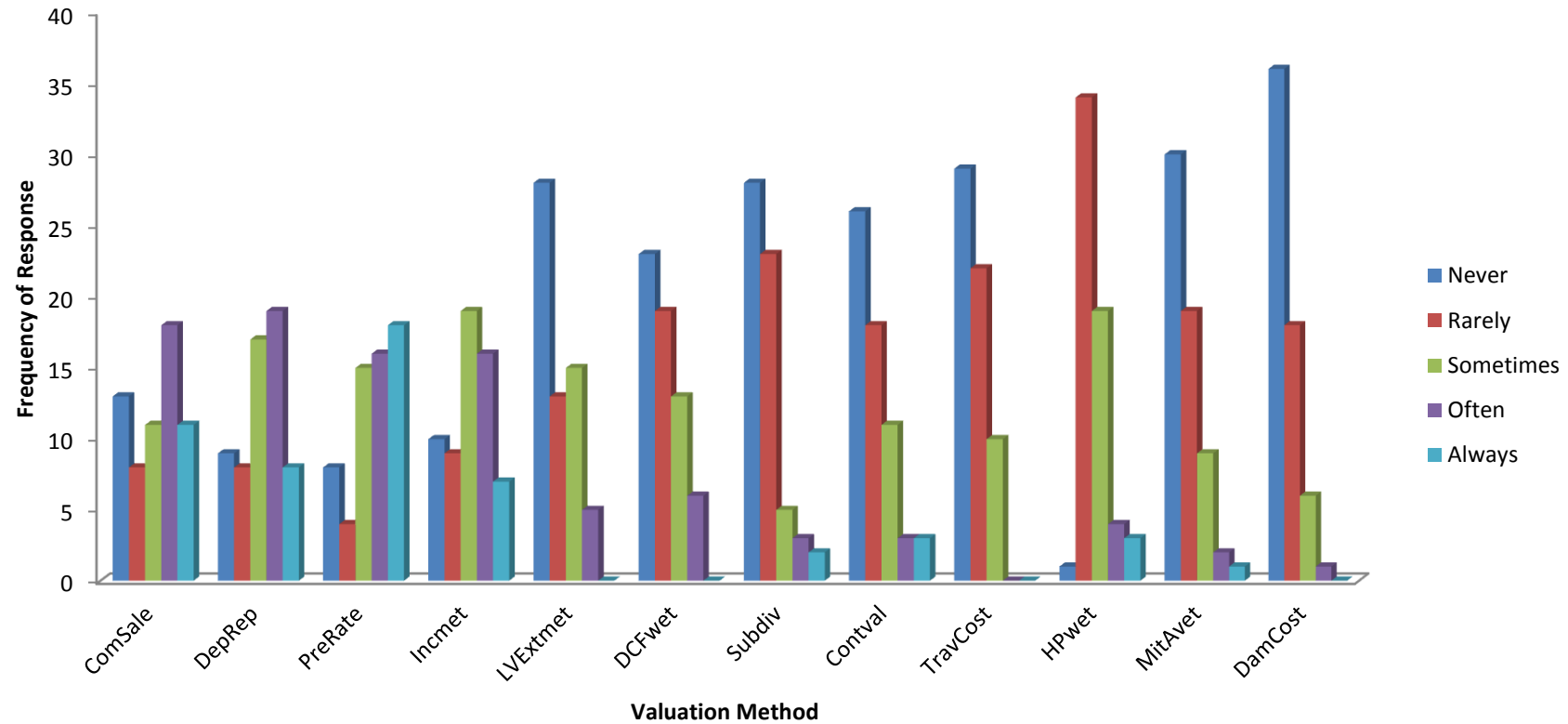
Figure 5.11: Combined Choice of Wetlands Valuation Methods
Source: Field Data (2013)

5.7.3. Use of Pre-determined Compensation Rates:

The use of the Pre-determined Compensation Rates showed a similar response from the respondents as shown in Figure 5.11 where 29% (18) said they always use this method; 26% (16) said they often use the method; 25% (15) said they sometimes use it; 7% (4) said they rarely use it; and 13% (8) said they never use the method.

When combined into two broad groups, approximately 80% said they always use this method while only 20% said they never use the method. This appears to be an extension of the methods of valuation stipulated by the LUA for compulsory acquisitions and the inertia among valuers to conduct any original market survey to confirm the acceptability of the results of applying the legally prescribed methods of valuation. Valuers thus hide behind the screen of legal prescription irrespective of the purpose of the valuation. The defects of this method were stated in section 3.9.2 above.

5.7.4. Use of Income Capitalisation Method:

Valuers considered the income capitalisation method and 12% (7) said they always use the method; 26% (16) said they very often use it; 31% (19) said they sometimes use it; 15% (9) said they rarely use it; and 16% (10) said they never use the method as shown in Figure 5.11 above. When grouped into two, the responses are magnified as only 69% said they always use this method while 31% said they never use the method. For the method to be applied to a contaminated wetland, the valuer requires to imagine a hypothetical condition of "no contamination" and value the income stream using assumed stream of income or capitalisation rate to determine the assumed unimpaired value (Simons, 2006). This method of valuation still relies on market data to be effective and considering the peculiarity of the Niger Delta wetlands, it is difficult to appreciate how the method is applied.

5.7.5. Use of Subdivision Development Valuation Method:

Similarly valuers considered the use the Subdivision development Valuation method and only 3% (2) said they use it always; 5% (3) said they often use it; 8% (5) said they sometimes use it; 38% (23) said they rarely use the method; while 46% (28) said they never use the method. These are shown in Figure 5.11 above. A combination into two categories shows majority respondents 84% have never used this method while only 16% said they have used it sparingly. There appears to be a lack of appreciation of this

valuation methodology hence its non-use by valuers. In its elementary form, this method is most suitable for valuing development land rather than contaminated wetlands.

5.7.6. Use of Land Value Extraction Method:

In the same vein, valuers were asked about the use of the Land Value Extraction method and Figure 46 shows the various responses. In their response, there was no response for use always; 8% (5) said they often use it; 25% (15) said they sometimes use it; 21% (13) said they rarely use it; while 46% (28) said they have never used it. There is evidence that majority valuers 67% have never used this method while 33% seem to have used it sometimes. It is obvious that this is not a common method of valuation though in its basic form, it is only a variant of the comparable sales approach of valuation. This implies that valuers are not utilising the full array of valuation techniques available in the developed economies yet in the Niger Delta, thus creating the need for a revision of the valuation curricular to include all the available techniques. This is the responsibility of academics that should educate their students on these methods and conduct continuous professional development trainings for practicing valuers and also create the awareness of these methods at the Professional Institution and the regulatory body of valuers.

5.7.7. Use of Discounted Cash Flow Technique:

The use of the Discounted Cash Flow Technique did not fare any better as 10% (6) said they often use this method; 21% (13) said they sometimes use it; 31% (19) said they rarely use the method; and 38% (23) said they never use this method. These are shown in Figure 5.11 above. On the average, only 31% said they use the method sometimes while 69% said they never use the method.

Considering that this method is a variant of the income capitalisation method, it is surprising that a majority of valuers do not use it. It is possible that the process of estimating future incomes and discount rates overwhelms valuers that they prefer to avoid it rather than hazard a guess to apply the method. As it will be shown later, this appears to be the all-inclusive method valuers can use to capture all the peculiarities of the Niger delta wetlands if they are to discharge the responsibility of assessing the damage suffered by land owners due to contamination.

5.7.8. Use of Contingent Valuation Method:

The use of the Contingent Valuation Method is a rarity as shown in Figure 5.11 above where only 5% (3) said they use this method; another 5% (3) also said they often use the

method; 18% (11) said they sometimes use the method; 29% (18) said they rarely use the method; while 43% (26) said they never use the method. This shows that on the average, majority respondent valuers 72% have never used this method while a minority 28% said they sometimes use the method. It can be inferred that the respondent valuers do not understand what the contingent valuation method though some academics have advocated its use. The difficulty of interpreting the stated preferences of the respondents to a contingent valuation survey seems to be the main hindrance to the use of this method, also the restricted time available to valuers to prepare and report their findings on the damages payable following a contamination incidence renders this method difficult to adopt in the valuation process.

5.7.9. Use of Travel Cost Technique

No respondent said they often or always use this method; only 16% (10) said they sometimes use the method; 36% (27) said they rarely use the method; while 48% said they have never used the method. On the average, while only 16% said they sometimes use the method, majority respondents 84% said they have never used the method. It is obvious that this method of valuation is not in use in the Niger Delta region, further strengthening the need for curricular review to incorporate mother valuation techniques.

5.7.10. Use of Hedonic Pricing Model:

When asked about the use of the Hedonic Pricing Model for valuation, Figure 50 shows that no respondent said they always use this method; 5% (3) said they often use the method; 7% (4) said they sometimes use the method; 32% (19) said they rarely use the method; and 56% (34) said they never use the method. On the average, only 12% said they sometimes use the method, while 88% had never used the method in valuing. It appears that the respondent valuers do not understand the mechanics of this method but in an area where there is a dearth of market data, it becomes impracticable to apply a method of valuation that depend on the market to assemble the components of the method.

5.7.11. Use of Mitigative/Avertive Expenditure:

Similarly, the use of the Mitigative/Avertive Expenditure method seems to be rarely adopted. Figure 5.11 shows that only 2% (1) said they always use this method; 3% (2) said they often use the method; 15% (9) said they sometimes use the method; 31% (19) said they rarely use the method; while 49% (30) said they never use the method in valuation. There appears also to be a lack of understanding of the mechanics of this method hence

majority respondents of 80% asserted that they never use the method and only 20% said they use it sometimes.

5.7.12. Use of Damage Cost Avoided Method:

Finally, respondents said that they rarely use the Damage Cost Avoided method of valuation as shown in Figure In this Figure, only 2% (1) said they often use the method; 9% (6) said they sometimes use the method; 30% (18) said they rarely use the method; while 59% (36) said they never use this method at all. Generally, only 11% showed any use while majority 89% said they have never used the method, indicating the absence of any knowledge of the method and reinforcing the need for curricular review to equip future valuers and retrain practicing valuers.

To be able to determine which method of valuation is mostly used for wetland valuations, the above responses are ranked according to their Relative Importance Index as shown in Table 5.5 below.

Table 5.5: Ranking of Wetlands Valuation Methods

Valuation Method	Never	Rarely	Sometimes	Often	Always	RII	Rank
Comparable Sales Method	13	8	11	18	11	0.62	3rd
Depreciated Replacement Cost Method	9	8	17	19	8	0.63	2nd
Pre-determined Compensation Rates	8	4	15	16	18	0.70	1st
Income Capitalisation Method	10	9	19	16	7	0.60	4th
Subdivision Development Method	28	13	15	5	0	0.39	8th
Land Value Extraction Method	23	19	13	6	0	0.41	6th
Discounted Cash Flow Technique	28	23	5	3	2	0.36	9th
Contingent Valuation Method	26	18	11	3	3	0.40	7th
Travel Cost Techniques	29	22	10	0	0	0.34	11th
Hedonic Pricing Model	1	34	19	4	3	0.51	5th
Mitigative/Avertive Expenditure	30	19	9	2	1	0.35	10th
Damage Cost Avoided	36	18	6	1	0	0.31	12th

Source: Field Data (2013)

Table 5.5 indicates that the first five valuation methods of choice are the Pre-determined Compensation rates, the Depreciated Replacement Cost, the Comparable sales, Income Capitalisation and the Hedonic Pricing Model. Besides the hedonic pricing model, all the first ranking methods are the orthodox methods of valuation, confirming the fact that most valuers are just following their habits without thinking of novel approaches to valuation.

5.7.13. Triangulation with Expert Interviews:

When these results are compared with the responses of the interviewees, there is a remarkable difference. Among the professionals interviewed, 60% (8) interviewees stated that they use the investment method in valuing wetlands; 8% (1) valuer said that in addition to the investment method, he uses the Human Capital Approach to value lives where the contamination of the wetland results in death or injury to life; 16% (2) said that wetland valuation was not common and did not state any method of valuation that has been used; 8% (1) said that he relies on past valuation reports to value any wetland; while 16% (2) said that in addition to the investment method, they simulate the market for non-market goods i.e. he conducts a type of contingent valuation survey to value wetlands; 8% (1) said they use the comparable sale price of goods and the economic potential of the wetland in valuing it. It is clear from these responses, that there is no uniform standard of practice involved in wetland valuations as only two of the respondents clearly stated that they have experience in this type of property. RESP 5 stated thus:

"It is difficult to place value on wetlands because of the tremendous natural resources they contain and the valuers' training now is not sufficient to enable us value wetlands, except those who can conduct personal research and read wide who can acquire some knowledge of how to go about it."

RESP 6, who is a principal officer of a government department in charge of lands in one of the Niger Delta States, put it bluntly:

"We are not conversant with the valuation of wetlands and cannot categorically state whether urban land valuation methods can be applied. We are more acquainted with the valuation of urban land."

When this is contrasted with the statements of RESP 11 who is an academic and a consultant in practice, the absence of any standard becomes very clear. This respondent said:

"While we may consider urban land valuation methods in valuing wetlands, the paucity of data may hinder the applicability of urban land valuation methods to wetlands as there is hardly any available comparable data such is the preponderance in the urban land markets."

5.7.14. Implications for Wetland Valuation Methods:

Both results have highlighted the need for a new paradigm in the valuation of wetlands in the Niger Delta if there is to be any consistency and uniformity of practice. To the government and other public agencies, it is necessary to know the economic value of the wetlands which will only be possible when there is a unified approach to the determination of such values. Such knowledge will assist in formulating policies that will preserve the wetlands and its resources by ensuring their sustainable use. To the IOCs who undertake economic developments in the region, a clearly defined valuation approach will enable them determine the exact cost of acquiring any wetland for their business purposes and what they will be paying for should any accident occur and contaminates the environment. Academics and trainee valuers will a new research vista with the aim of sharpening their skills in wetland valuations opened up, while professional valuers will minimise valuation differences and disputations among themselves when representing opposing parties in any transaction involving the valuation of wetlands.

5.8. Valuations for Damage Assessment (Compensable Value):

While 23 (37.7%) respondents stated that they sometimes undertake damage assessment, a cumulative 23 (37.7%) respondents also confirmed that they had never or rarely undertaken a damage assessment valuation. This means that almost 65% of the respondents rarely value real properties to determine damages due to contamination. Only 8 (13.1%) respondents confirmed that they often engage in damage assessment and 7 (11.1%) respondents confirmed being always engaged in damage assessment. This result shows that practising valuers either reject damage assessment valuation assignments due to the contentious nature of such assignments or are not usually consulted for such assignments due to the perception that they produce values that do not compensate for the damages suffered whenever they are required to advise on the value of damages, neither do the Oil Companies engage valuers. This is confirmed by Akujuru and Ukaigwe (2001) when they stated that Oil Companies hardly rely on professionally determined valuation and values. This means that injured parties directly negotiate with the polluters for compensation, a practice that is always encouraged by the polluters, thus endangering the future of the valuation profession as confirmed by Amnesty International (2011) when they stated that the compensation system is neither transparent of fair as the injured parties only get whatever they can obtain by negotiation due to the provisions of the relevant laws, preferred practise of the IOCs, and the observable barriers to justice in the Niger Delta.

From the above findings, it can be concluded that while experienced professional valuers practise in the Niger Delta, only a few of them undertake valuations to determine damages due to contamination resulting from oil spillages. This result necessitates the need to explore why this area of professional valuation practise is under-patronized and little expertise exhibited by practising valuers in the Niger Delta. The succeeding sections of this study will therefore address this, while striving to meet the stated objectives.

5.8.1. Valuing Contaminated Wetlands in the Niger Delta:

To ascertain what constitutes a contaminated land in the Niger Delta, a question was asked about the identified indicators of the presence of contamination and their respective importance. The indicators identified from literature, were the presence of a damaged landscape; sickly or dead vegetation; discoloured or disturbed soil; discoloured or polluted water; depressed areas or pits; noxious or unusual odours in the environment; soil boring holes indicating testing for crude hydrocarbon in the soil; coloured drainage ditches where they exist; and discharge/seepage of water or fluids where there has been none. Among the 61 (100%) valid respondents 24 respondents representing 39.34% identified damaged landscaping as an extremely important indicator of contamination; 24 (39.34%) identified it as being moderately important; 3(4.92%) were neutral; 4 (6.56%) considered it to be slightly important; while 6 (9.84%) considered damaged landscaping not to be very important in indicating the presence of contamination. While responding to the importance of the presence of a sickly or dead vegetation, 4 (6.56%) said this was not very important; 3 (4.92%) said it was slightly important; 2 (3.28%) were neutral not saying if it was important or not; 14 (22.95%) said it moderately important while 38 (62.30%) indicated that it was extremely important. The presence of discoloured or disturbed soil was rated by 5 (8.20%) as not being very important; 4 (6.56%) as being a slightly important indicator; 5 (8.20%) were neutral; 21 (34.43%) identified it as being moderately important; while 26 (42.62%) identified it as being extremely important. 4 (6.56%) indicated that the presence of discoloured or polluted water was not a very important indicator of contamination; 3 (4.92%) said it was slightly important; 2 (3.28%) were neutral; 9 (14.75%) said it was moderately important; while a majority 43 (70.49%) opined it was extremely important. For the presence of depressed areas or pits, 10 (16.39%) did not consider it very important; 10 (16.39%) considered it slightly important; 8 (13.11%) were neutral; 30 (49.18%) thought it was moderately important; while only 3 (4.92%) felt it was extremely important. The perceiving of noxious or unusual odours in the environment was considered by 9

(14.75%) as not very important; 7 (11.48%) felt this was slightly important; 2 (3.28%) were neutral; 17 (27.87%) considered it moderately important while 26 (42.62%) considered this factor as being extremely important. Sometimes there are soil boring holes dug to see if the soil underneath has traces of spilled crude oil, 11 (18.03%) of the respondents felt this is not a very important indicator of contamination; 8 (13.11%) felt it is slightly important; 17 (27.87%) were indifferent about it; 21 (34.43%) considered it to be moderately important and only 4 (6.56%) felt it was extremely important. Where there are drainage ditches, the observance of coloured drainage ditches was considered by 8 (13.11%) as not very important; 12 (19.67%) as slightly important; 8 (13.11%) were neutral while 19 (31.15%) and 14 (22.95%) considered it to be moderately and extremely important respectively. The final indicator is the discharge /seepage of water or fluids where 8 (13.11%) felt it was not very important; 7 (11.48%) considered it to be slightly important; 10 (16.39%) were neutral about it; 18 (29.51%) considered this factor to be either moderately important or extremely important. The various responses are shown on Table 1 and graphically represented on Figure 5.12 below.

Table 5.6: Importance of Contamination Indicators

INDICATORS OF DEGRADATION	Not Very Important	Slightly Important	Neutral	Moderately Important	Extremely Important
Damaged Landscaping	6 (9.84%)	4 (6.56%)	3 (4.92%)	24 (39.34%)	24 (39.34%)
Sickly or Dead Vegetation	4 (6.56%)	3 (4.92%)	2 (3.28%)	14 (22.95%)	38 (62.30%)
Discoloured/ Disturbed Soil	5 (8.20%)	4 (6.56%)	5 (8.20%)	21 (34.43%)	26 (42.62%)
Discoloured/ Polluted Water	4 (6.56%)	3 (4.92%)	2 (3.28%)	9 (14.75%)	42 (70.49%)
Depressed Areas or Pits	10 (16.39%)	10 (16.39%)	8 (13.11%)	30 (49.18%)	3 (4.92%)
Noxious/ Unusual Odours	9 (14.75%)	7 (11.48%)	2 (3.28%)	17 (27.87%)	26 (42.62%)
Soil Boring Holes	11 (18.03%)	8 (13.11%)	17 (27.87%)	21 (34.43%)	4 (6.56%)
Coloured Drainage Ditches	8 (13.11%)	12 (19.67%)	8 (13.11%)	19 (31.15%)	14 (22.95%)
Discharge/Seepage of Water or Fluids	8 (13.11%)	7 (11.48%)	10 (16.39%)	18 (29.51%)	18 (29.51%)

Source: Field Work, 2013
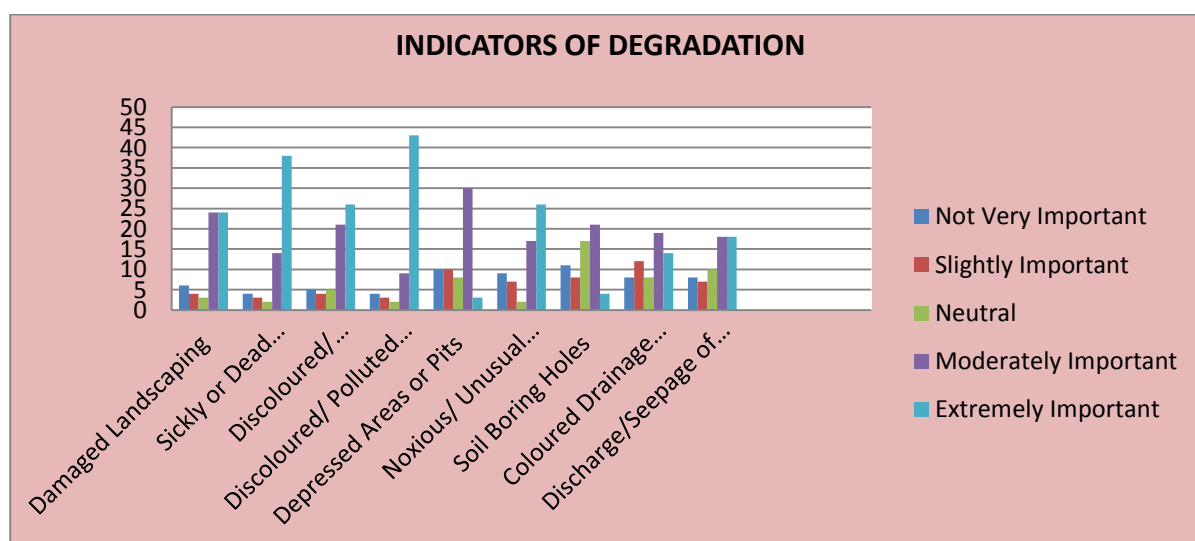
Figure 5.12: Indicators of Degradation

Source: Author's Fieldwork (2013)

Combining and analysing the various responses by means of a frequency chart showed that discoloured or polluted water was ranked 1st as the most frequent indicator of contamination by oil spillage, this was followed by sickly or dead vegetation and the presence of noxious and unusual odours, while soil boring holes was ranked 8th and last. This ranking was done by examining the extreme responses of 'Not Very Important' and 'Extremely Important' as shown in Figure 5.12 above. This result is consistent with the nature of the Niger Delta terrain more so, with the composition of a wetland being made up of both wetlands and upland (Keating, 2002, p.44). This result corresponds to the list of possible indicators of environmental degradation which the valuer will observe before obtaining a detailed scientific report on the contamination incident (Boykin, 2001, p. 200).

Most oil spills in the Niger Delta has occurred in the swampy areas of the Niger Delta wetland, since the area is not very firm and has a very high water table which causes the oil pipelines to shift regularly**.**

Table 5.7: Indicators of Contamination

INDICATORS OF DEGRADATION	Not Very Important	Extremely Important	Rank
Damaged Landscaping	6	24	4th
Sickly or Dead Vegetation	4	38	2nd
Discoloured/ Disturbed Soil	5	26	3rd
Discoloured/ Polluted Water	4	43	1st
Depressed Areas or Pits	10	3	7th
Noxious/ Unusual Odours	9	26	3rd
Soil Boring Holes	11	4	8th
Coloured Drainage Ditches	8	14	6th
Discharge/Seepage of Water or Fluids	8	18	5th

Source: Field Data (2013)

To corroborate the questionnaire survey findings, the respondents to the expert interviews were asked how they identify contaminated land when requested to assess damages due to contamination. All the respondents (100%) stated that they do this by visual inspection where they look out for tell-tale signs that indicate contamination. RESP4 expanded this by stating that:

"Oil *installations traversing the land may contaminate the land by leakages of crude oil overflowing the land and pollutants can be seen visibly. Also by perceiving noxious odour in the air, change in vegetation and observing oil sheens on ponds and bodies of water."*

The expert respondents also stated that the exact impact of the contamination is confirmed by scientific reports of Environmental Scientists who analyse the plant and soil samples to confirm whether the impact is transient or permanent and the estimated duration of the observed impact, which are vital indices for the consequent damage assessment. From these findings, it can be inferred that visual inspection of the impacted land only confirms the presence of contamination by the observance of any of the contamination indicators but most frequently, the discolouration or pollution of water courses and the appearance of sickly or dead vegetation. In the Niger Delta terrain where there is a large body of water, most contamination incidents are noticed by the pollution of rivers and streams and subsequent death of fish and other marine animals. Though scientific reports are used to confirm the duration of impact, the cost of procuring such reports by the affected landowners who are not sure of the cause of the contamination and the possibility of being paid for damages suffered, means that most assessments are done without a supporting scientific report. Most polluters may not be willing to make public the findings of any scientific investigations commissioned by them for fear of increasing their liability, thus such reports are shrouded in secrecy and are of no use to the land owners. In such circumstances, valuers rely on past reports or guesstimates to derive their assessment indices. The UNEP (2011) report on Ogoni has recently provided a benchmark that valuers can now adopt, depending on the adjudged effect of the contamination, the following Table 5.8 should guide valuers in determining duration of impact where mangroves are in involved.

Table 5.8: Proposed Stages of Impact and Recovery of Oiled Mangroves

Author	Stage/Phase	Response
Lewis, 1981	Acute	
	0-15 days	Death of birds, turtles, fish, and invertebrates
	10-30 days	Defoliation and death of small (<1m) mangroves, loss Of aerial root community
	Chronic	
	30 days-1 year	Defoliation and death of medium (<3m) mangroves, tissues Damage to aerial roots
	1-5 years	Death of larger (>3m) mangroves; loss of oiled aerial roots And regrowth of new one (sometimes deformed); decolonisation of Oiled damaged areas by new seedlings
	1-10 years	Reduction in litter fall reduces reproduction, and reduced survival of Seedlings; death or reduced growth of young trees colonising oiled Sites? Increased insect damage?
	10-15 years	Complete recovery
Lamparelli et al, 1997	Initial Effect	
	0-1 year	Seedling and saplings die; no structural alterations can be measured
	Structural damage	
	1-4 years	High motility is observed, and the oil impact can be measured in terms of major structural alterations
	Stabilisation	
	4-9 years	No or few additional alterations to the structural parameters; sampling Growth is observed
	Recovery	
	>9 years	It is possible to measure improvements in the structural tree parameters; Ecosystem may not recover fully to its original state.

Source: NRC, 2003

- Correlation of Indicators of Degradation and Contamination Damage Assessment:

To test whether the presence of an indicator of contamination is associated with the type of value sought in a contamination damage assessment, the top four indicators of degradation taken to confirm the presence of contamination were correlated. Using the Spearman rho, revealed that there is a weak correlation between the group of indicators and the value sought in a contamination damage assessment with r=.084; -.071; .112; and -.011, n= 61, p< .0005. This means that the mere observance of any of the contamination indicators

does not influence the value sought in a damage assessment valuation but only serves to confirm that there is a contamination for which there should be a damage assessment.

Correlation of most important indicators of contamination and value sought in Damage assessment.

Table 5.9: Correlation of Indicators of Contamination

	DamLan.	DeadVeg.	DisColSol.	PollWat
ConDamAss	.084	-.071	.112	-.011
	.522	.587	.390	.935
	61	61	61	61

Source: Field Data (2013)

Legend:

ComDamAss = Contamination Damage Assessment

DamLan   = Damaged Landscape

DeadVeg   = Dead/Sickly Vegetation

DisColSol   = Discoloured/Disturbed Soil

PollWat   = Polluted/Discoloured Water

In view these observations and the expressed need to use other valuation methods, it becomes necessary to examine the factors that influence the choice of valuation methods.

5.8.2. Factors Influencing choice of Valuation methods (Q. 15)

Valuers were asked to indicate what factors influence the choice of valuation method while valuing contaminated wetlands by choosing between three variables including Methods usually by the firm; following other Valuers' Practice; and Methods Suitable to Subject Property. Figure 5.13 shows a histogram of the questionnaire responses.
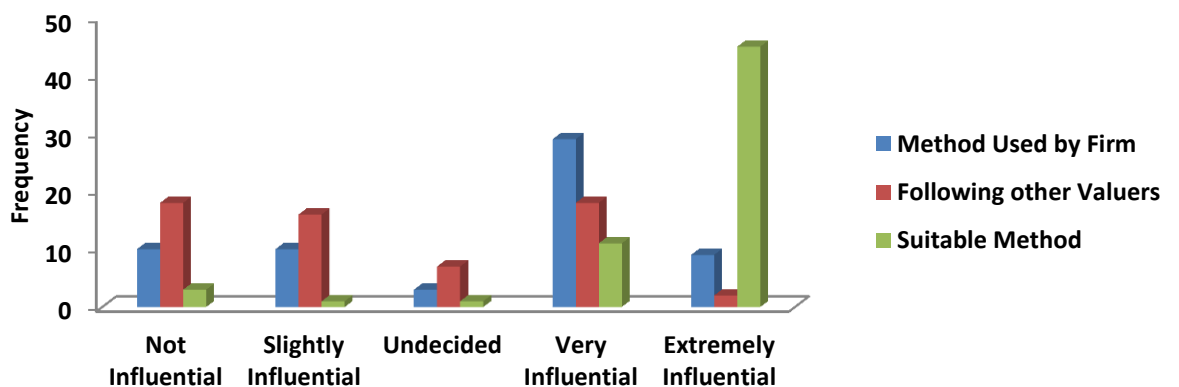
Figure 5.13: Factors Influencing the Choice of Valuation Method

Source: Field Data (2013)

From the questionnaire respondents, 16.4% stated that the methods used by the firm undertaking the valuation was either not at all important or was slightly important. 4.9% of the respondents were undecided while 47.5% felt that the firm's practice was very influential in choosing a valuation method, and 14.8% considered the practice records as being extremely influential. Grouping these responses into two halves (discarding the undecided responses) of not influential and influential, shows that on the average, 32.8% of valuers did not consider their office records to be influential while 62.3% did consider it very influential in selecting a valuation method when valuing a contaminated property. 29.5% of the respondents also said that other valuers' practice was not at all influential to them when they have a valuation assignment, 26.2% said they were slightly influenced by what methods other valuers were adopting, 11.5% were undecided and might be regarded as non-existent, 29.5% were very much influenced by other valuers' practice and only 3.3% confirmed that they were other valuers' practice was extremely influential in selecting a valuation method. Grouping the responses into two broad categories and ignoring the undecided responses, indicates that while 55.5% said they were not influenced by other valuers' practice, as much as 32.8% confirmed being influenced by other valuers' practice.

When asked whether valuation methods were chosen according to the nature of the assignment, 4.9% of the respondents said the suitability of the method was not at all influential in the choice of a valuation method; 1.6% felt it was slightly important; 1.6% were undecided; 18.0% felt the suitability was very influential while 73.8% stated that it was extremely influential. When aggregated into two groups of 'Not Influential' and 'Influential' while discarding the 'Undecided' responses, indicates that only 6.5% of the respondents did not consider that the nature of the valuation assignment should influence the choice of valuation method and 91.8% confirmed that they chose their valuation method based on the nature of the assignment.

Table 5.9 below shows the responses on the factors that influence the choice of a valuation method. This response confirms that most valuers follow the appraisal process that begins with a definition of the problem necessitating the valuation as the choice of method suitable for the assignment ranks 1st and the reliance on the practice of other valuers ranks 3rd. Figure 5.14 below illustrates this result graphically. From the graph, it is obvious that most valuers chose a valuation method based on the nature of the valuation assignment they are undertaking.

Table 5.10: Factors Influencing Choice of Valuation Method

Variable	Not Influential	Extremely Influential	Ranking
MUbyFirm	32.8	62.3	2nd
FoVPrac	55.5	32.8	3rd
MstAssin	6.5	91.8	1st

Source: Field Data (2013)
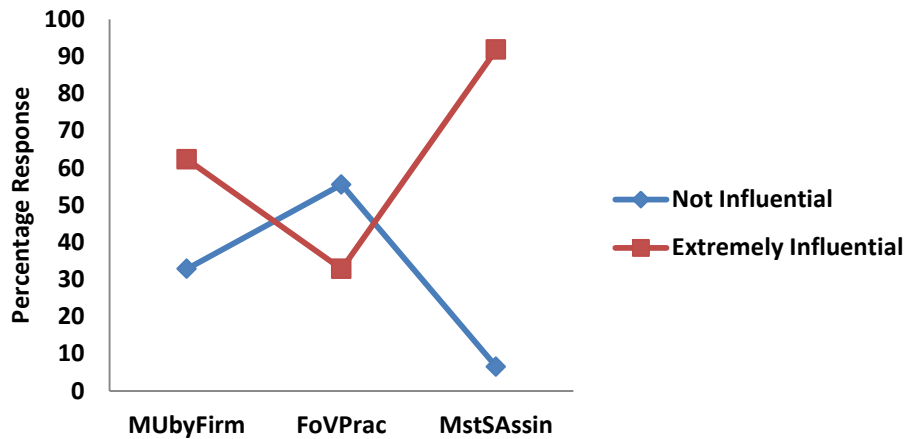
Figure 5.14: Comparison of Factors Influencing Choice of Valuation Method

Source: Field Data (2013)

Legend

MUbyFirm = Method Usually used by Firm

FoVPrac = Following other Valuers' Practice

MstAssin = Method suitable to Subject Assignment

When the professional valuers who participated in the expert interviews were asked how they chose their valuation methods, 60% of them confirmed that they relied on their cognate experience to choose a method that was suitable for the subject assignment, while 40% of them relied on their previous reports and the enabling statute as they asserted that most of the valuation was provided for by the relevant statute. None of the expert interviewees followed other valuers' practice as this was unprofessional and as stated by RESP12,

"*Professionals who know their onions do not get influenced by other professionals or the party originating the valuation*".

Though the percentages differ, the results of the questionnaire analysis tends to be confirmed by the expert interviews and it is obvious that valuers rely more on past

experiences on similar assignments than on any esoteric valuation technique, indicating that habit plays a lot of part in fashioning that practice of professional valuers. To confirm the relationship of the factors influencing choice of Valuation methods and the indicators of degradation, the favoured factors were tested against the indicators and the following table resulted.

Table 5.11: Correlation of Valuation Methods and Indicators of Degradation

Influecing Factor	Da-La	Dead Veget	DiscSoil	Pollu-Water	Deped Pits	Unusal Odours	Soil Holes	Colr-Ditch	Sep Wat
MUbyFirm	.024	.051	-.068	.002	-.030	.172	.048	.103	.131
MstAssin	.022	.267	.133	.212	.062	.381	.104	.144	.098

Source: Field Data (2013)

From the table above, There appears to be a weak relationship the indicators of degradation and the choice of valuation method and the method used by the firm and a weak relationship between all the indicators except noxious odours that shows a medium relationship with r = .381, n = 61, p < .005.

The reliance on methods usually used by the firm probably implies that every valuation problem is considered to be similar to an earlier assignment undertaken by the firm and the previous method of valuation adopted should be relevant. This is a habit that valuers have formed over the years for several reasons ranging from their education to the practice environment which has been conditioned by the prevailing statutes affecting valuation practice. The reliance on methods used by the firm also means that there is a conservatism among valuers that believes that knowledge is static and not subject to change, a belief that has resulted in some valuers calling themselves "old generation valuers" and those adopting modern methods being termed "jet age valuers". A valuer is defined by the IVSC (2007, p.38) as a person who possesses the necessary qualifications, ability, and experience to execute a valuation, and shall be a person of good repute who:

- has obtained an appropriate degree at a recognised centre of learning, or an equivalent academic qualification;

- has suitable experience and is competent in valuing in the market and category of the asset;

- is aware of, understands, and can correctly employ those recognised methods and techniques that are necessary to produce a credible valuation;

- is a member of a recognised national professional valuation body;

- pursues a programme of professional learning throughout his or her career; and

- follows all the requirements of the IVSC Code of Conduct.

There is at present about 35 accredited institutions training graduates to be professional valuers in Nigeria. The ESVARBON has so far registered only about 6000 persons as Estate Surveyors and Valuers in Nigeria with a population of about 170 million people i. e. only about .004% of the population are Valuers. The academic curriculum is regulated by the National Universities Commission of Nigeria (NUC) whose last Standards were published in 2007 and the National Board for Technical Education (NBTE) who's most recent guidelines were also issued in 2007. These two bodies regulate University and Polytechnic/College of Technology education respectively in Nigeria. While there has been in recent years an increase in educational institutions producing graduates who become professional valuers and an increase in the number of academics who now teach, analyse, question, and reason and develop academic thought in valuation as their life's work, the institutions and academics have taught from unrevised curricular that has not kept pace with changes in the wider world. This has meant that valuers have been taught valuation methods that may not be very relevant to the prevailing market conditions. Today's education concentrates on giving students the traditional estate management body of knowledge, without encouraging them to think, reason, or question convention. While this style may be adequate for survival in the market place, it is arguable if the present curriculum and its rendition are adequate for a technologically advanced twenty first century. Reacting to the dependence on historical methods by valuers, Millington (2003) opined that "valuers have valued solely on the opinions of values which are frequently unsubstantiated by any rational and systematic analysis of market transactions or of underlying market and economic conditions". The overdependence on historical methods means that many valuers hardly appreciate the need for any research or its usefulness to the valuer. Research entails examining historical transactions, relating the historical influences of value to the present assignment and enables the professional valuer to determine what should be the current level of values, determine variations in values, identify factors responsible for reported values, and determine the trend in value, and not just lifting a method from records to apply to the current valuation. As stated by Millington

(2003, p.63), "the thoughtful application of the results of well-directed valuation research must assist the competent professional to perform better". Valuers rely on the existence of data which has been systematically analysed but there is a dearth of data on market transactions on contaminated wetlands in the Niger Delta thus casting doubt on what official records that the respondents rely on and raises the question whether valuers think or act habitually. This dependence on history means that valuers do not follow the appraisal process systematically by first defining the problem they are called upon to solve, otherwise they would have realised that no two contaminated sites are the same each has different peculiarities and characteristics.

The split of the responses ordinarily should have meant that there are thinkers in the valuation profession but the 32.8% who stated that they are not influenced by their office methods, is considered reasonably high and this may not necessarily mean that such valuers as constitute this proportion are great thinkers acting independently of their office routine, as it may be a response due to inexperience, as confirmed by RESP5 who said

"*It is difficult to value any wetland because of their nature*"

and RESP6 who said that

"*Our current training is deficient in wetland valuation and thus we cannot profess any expertise*".

It is possible that these respondents have not valued contaminated wetlands before or are just influenced by the relevant statutes that they are interpreting as being applicable. As stated in 3.6 professional valuers apply valuation methods prescribed for compulsory acquisition in valuing for damage assessment of contaminated wetlands in the Niger Delta. The general misconception about the applicability of the Land Use Act to contamination damage assessment has led valuers not to rely on previous methods of valuation they might have used in previous assignments and there appears to be a literally interpretation of the need to treat each valuation assignment as a new project usually taught valuers, to mean that no recourse should be made to previous valuations whereas a little thought will show the need to review any previous assignment to learn from such review and improve the valuers performance on the current valuation.

5.8.3. Factors determining Choice of Comparables (Q. 16)

The choice of comparable is influenced by their availability in the firm's database; to justify the choice of valuation method; its availability in similar location for similar

properties; similarity in the level of contamination; and to ensure consistency in the firm's practice. When asked to indicate which of these factors were important, the responses showed that most valuers (31%) relied more on the need to be consistent in their practice in choosing their comparables. The availability of data in their database followed with 24%; then selecting comparables to justify the method of valuation came next with 22%; followed by the choice based on properties with the same level of contamination at 18%; and lastly by considering properties in similar locations at 5%. These are shown in Figure 5.15 below.
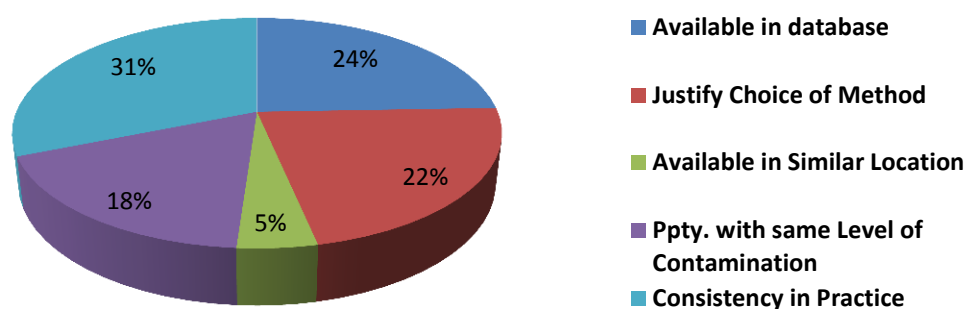
Figure 5.15: Factors Determining Choice of Comparables
Source: Field Data (2013)

Examining these factors separately, shows that 18% of the respondents said it was not very important to have data in the firm's database before accepting a valuation assignment; 3% felt that it was slightly important; 2% were neutral; 33% relied on their database in choosing a comparable; while 44% felt that it was extremely important to have a database. When grouped into two and disregarding the neural responses, we now have 21% not relying on their database and 77% considering their database to be extremely important in choosing a comparable. This response indicates that valuers rely more on experience and base their valuation on historical data which they might have assembled in the past from an analysis of observed market transactions.

In response to whether comparables were chosen to justify the valuation method of choice, 17% said it was not very important to justify the valuation method chosen; 3% said it was slightly important; 10% were neutral, not being bothered either way; 39% said it was moderately important to justify the use of a valuation method; while 31% considered it extremely important to select comparables that justified the valuation method chosen. Without the neutral responses, this indicates 20% stating that it was not very important;

and 70% saying that it is extremely important to select comparables based on the valuation method chosen. This pattern of selection indicates the use of an abductive logic in performing a valuation assignment rather than inductive or deductive logic and indicates the presence of confirmation bias in valuers' behaviour referred to by Gallimore (1996). In this process, the valuer chooses what method to apply and selects the appropriate comparable that will enable him determine the value that justifies his stated definition of value.

When asked if they choose comparable from similar locations and similar properties, 3% of the respondents said it was not very important to select comparables on this basis; 8% felt it was slightly important; 10% were undecided and neutral; 38% considered similarity in type of property and location moderately important in keeping with rudimentary real estate economics that dictates the comparison of like with like; and 41% considered it extremely important to compare properties to others similar to them in terms of type and location. When divided into two and discarding the neutral responses, 11% considered it not very important; while 79% felt it was necessary to compare only similar properties. This is a common sense approach as real property by nature is very heterogeneous and only a comparison of the same kind will give a meaningful result.

To confirm if comparison was on the basis of contamination, 13% stated that similarity in the level of contamination was not very important; 23% stated that the search for a comparable with the same level of contamination was slightly important; 8% were undecided; 28% considered it moderately important; while 28% also deemed it extremely important to source for a property with a similar level of contamination. Disregarding the undecided respondents shows that 36% considered it not very important while 56% felt it was extremely important to find properties with same level of contamination. This response appears to be in keeping with the need to compare similar properties as it is done for developed properties frequently marketed. Whether it is possible to find any two wetlands that have been exposed to similar level of contamination or not, remains questionable.

Some valuers felt their firms' image was more important and thus 23% stated that it was not very important to ensure consistency in the firm's practice; 15% felt it was slightly important; 5% were undecided; 26% considered it moderately important; while 31% were of the view that it was necessary to consider consistency in their practices. Grouped into two classes, indicates that 38% felt it was not important while 57% considered it extremely

important. To place reputation before the correctness of the valuation is to chase shadow as the real property market is dynamic and legislations constantly change and such changes need to be reflected in valuation processes rather than sticking to past methods that may have been wrong.

When all the responses are examined together to determine the major preference of valuers it is discovered that the availability of similar properties in similar locations topped the list being the choice of 30% of the respondents; selecting comparables from properties with the same level of contamination came second with 28% of responses; availability in firms' database is third with 17%; selecting comparables to justify choice of valuation method is next with 16%; and lastly is to maintain consistency in practice. These are shown in Figure 5.16 and Table 5.10 below.
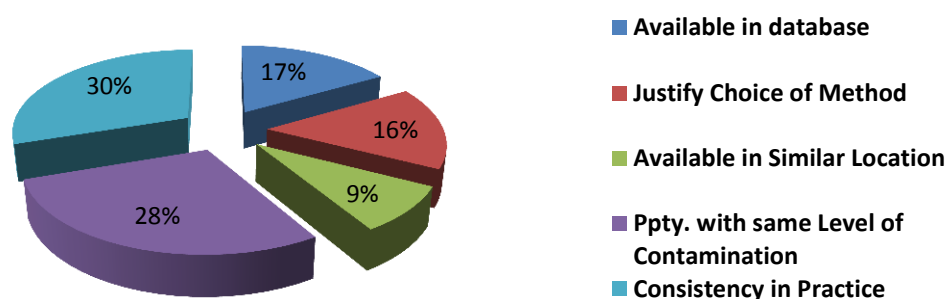
Figure 5.16: Analysed Factors Determining the Choice of Comparables

Source: Field Data (2013)

Table 5.12: Ranking of Factors Determining Choice of Comparables

Variable	Not Important	Extremely Important	Rank
Available in Database	21	77	2nd
Justify Choice of Method	20	70	3rd
Available in Similar Location	11	79	1st
Property with Same level of Contamination	36	56	4th
Consistency in Practice	38	51	5th

Source: Field Data (2013)

The interviewees responded like they did in the choice of valuation method where 60% said that they relied on their cognate experience in selecting comparables in line with the

valuation method they have chosen, while 40% relied on records available in their office (i. e. database). These responses compare with the choice of 31% of questionnaire respondents who cared more about consistency in their practice and 24% relying on their database. When compared, it can be inferred that the reliance on experience is akin to ensuring consistency in practice just as the reliance on past reports is similar to relying on available database. These results contrast with the ranking result which puts availability of similar property in similar location as the first determining factor in the choice of comparables and availability in database second. The result in Table 2 represent what the ideal situation should be but is contrary to the requirement of the IVSC (2007, p. 178) which states that "in the analysis of comparable data, it is essential that the properties from which the comparable data are collected have characteristics similar to the property being valued." Since there is a dearth of comparable contaminated sites in the market and it is difficult for the valuer to detect with certainty the proportion of value due to stigma of contamination and other value influencing features of the market, it is not likely that valuers will have a database to select comparables from or find similar contaminated properties in similar locations with the same degree of impact to select from. This buttresses Batho (2012)'s assertion that "the real problem with valuation lies in property's heterogeneity, as no two buildings are the same and transactions are relatively infrequent, so direct comparable transactions are usually rare and substitute evidence may come from a range of different sources". This is truer of contaminated wetlands as no two impacts of contamination and stigma can be the same.

The reliance on available database implies that valuers do not update their data and practices to keep pace with the dynamism in the market place, whereas the appraisal process conditions them to conduct a market research for any defined problem being tackled. Determining a defined value in a given location where contamination has occurred is always going to be different from that of another location hence the impact of the Exxon Valdez oil spill off the Alaskan coast was different from the impact of the BP oil spill along the coast of Mexico. Millington (2003) cautions that "the valuer must resist developing blind faith in the power of comparable evidence, and must carefully asses which evidence, if any, is in fact a reliable indication of what is likely to be paid in the market today and tomorrow". It is inappropriate to select comparables just to remain consistent in practice as this will only lead to over reliance on historical fact which may have no bearing with current market trends and in the case of contamination, the quantity of oil spilled may differ, the response rate and thoroughness in cleaning up may differ and

the water table may also have receded as to lessen the flow of contaminants. Excessive reliance on available database results in inbreeding of data over the years. Inbreeding occurs when valuers derives all data adjustments from within a limited data set leading to a loss of data independence (Appraisal Institute, 2008). It is therefore safe to say that the best choice will be to select comparables that will justify the chosen method of valuation as the method itself must have been chosen to meet the defined value been sought.

5.8.4. Determination of Income Levels used in Valuations (Q.18)

Valuers rely on published records to determine income loss when attempting to establish the opportunity cost or loss of income due to contamination. Possible sources of such records are government official records; valuation firm's database; other valuation firms' records; and filed research to collect such records. Respondents to the questionnaire survey were asked to state the frequency of use of each of these alternative sources of information. Figure 5.17 shows the descriptive analysis of the responses.
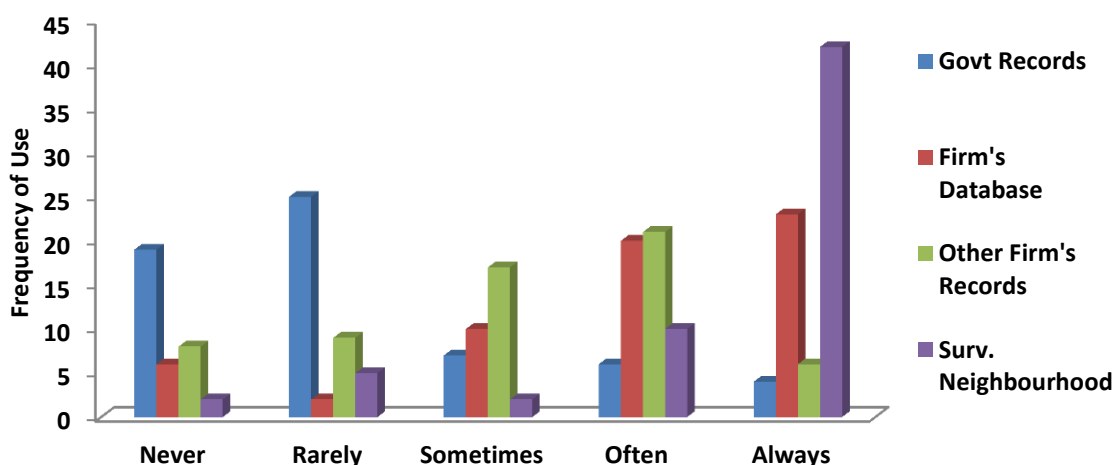
Figure 5.17: Sources of Comparable Data

Source: Field Data (2013)

An analysis of their responses indicated that they relied more on surveying the neighbourhood of the subject contaminated wetland to gather relevant valuation data. In their response, 2 (3.3%) respondents had never relied on the affected neighbourhood data; 5 (8.2%) rarely used this source; 2 (3.3%) sometimes used it; 10 (16.4%) often surveyed the affected neighbourhood; while 42 respondents representing 68.9% always surveyed the affected neighbourhood to collect comparable valuation data. Closely following this source, is the use of the firm's database to collect comparables. In their response, 6 respondents (9.8%) never used this source; 2 (3.3%) rarely used the source; 10 (16.4%)

sometimes relied on this source; 20 (32.8%) often used their database; while 23 (37.7%) always sourced for comparable data from their in-house database. Similar to this was the reliance on government records for which 19 (31.1%) said they never use them; 25 (41.0%) rarely use them; 7 (11.5%) sometimes use them; 6 (9.8%) often used government official records; while only 4 (6.6%) always sought for and used government records as a source of comparable data. The use of other firms' records had a more even response as 8 respondents (13.3%) never consulted other valuers; 9 (14.8%) rarely used other valuers' records; 17 (27.9%) sometimes consulted other valuers for comparables; 21 (34.4%) very often consulted other valuers; while only 6 (9.8%) said they always consulted other valuers for comparable valuation data. These responses are graphically illustrated in Figure 5.18 below.
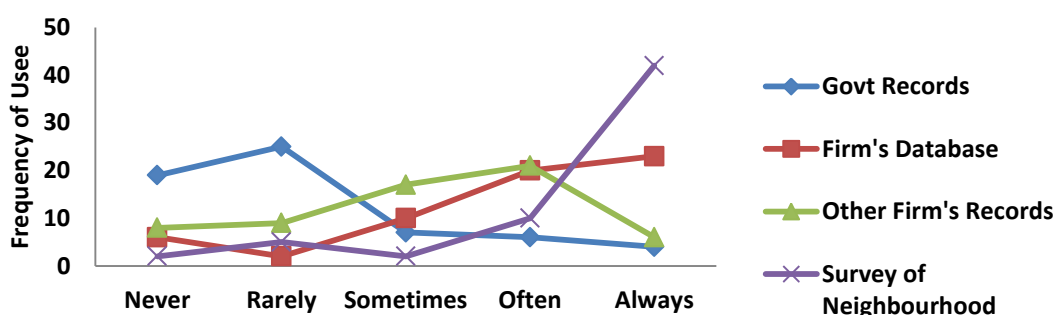
Figure 5.18: Frequency of Use of Source of Income Data

Source: Field Data (2013)

The interviewees to the face-to-face interviews responded like they did in the choice of valuation method where 60% said that they relied on their cognate experience in selecting comparables in line with the valuation method they have chosen, while 40% relied on records available in their office (i. e. database). To be able to isolate which source of comparable data was more frequently used, the total responses were grouped into two main categories of "Never" and "Always" and ranked. From the ranking, it became obvious that surveying the affected neighbourhood ranked first, followed by the firm's database, then reliance on other firms' records, and lastly using government records as a source of comparable data. These are shown in Table 5.13 below.

Table 5.13: Ranking of Data Sources

Source of Records	Never	Always	Rank
Government Records	44	17	4th
Firm's Database	8	53	2nd
Other Firm's Records	17	44	3rd
Survey of Neighbourhood	7	54	1st

Source: Field Data (2013)

These responses compare with the choice of 31% of questionnaire respondents who cared more about consistency in their practice and 24% relying on their database. When compared, it can be inferred that the reliance on experience is akin to ensuring consistency in practice just as the reliance on past reports is similar to relying on available database.

These findings indicate that there is a paucity of government data available on contaminated wetlands that can be relied on as comparables and confirm the fact that valuers are always very concerned with being consistent in their valuation practice since reliance on the firm's database ranks a high second. It is difficult to justify the reliance on field data form the neighbourhood of the contaminated wetland since there is generally no market for contaminated wetlands from which comparables can be collected, and there are no two contamination incidents that are similar in intensity and impact. It also shows that valuers rely more on their experience and database to handle such valuation assignments and frequently have very few comparables to choose from. This is confirmed by their response to the question inquiring about the number of comparables normally considered in their valuations, where 75%% of the respondents said they rely on only 1-5 comparables. The low ranking of the government and other firms' records is justified since secondary sales data adopted as a comparable, may result in incorrect conclusions where the valuer does not reflect the motivations of the parties to the transactions and may not understand the reasoning of the other valuers and as cautioned by the Appraisal Institute (2008), referencing of public records and data services does not verify a sales transaction but only confirms the recording of a transaction and that secondary sources do not provide adequate information about sale concessions, whether the sale was an arm's-length transaction, if multiple properties were involved in the sale, if personal property was included, and other factors influencing value. The findings also show that there is a near

absence of co-operation among valuers in practice, may be due to selfishness or the need protect their professional data and practice. The lack of co-operation among practicing valuers is considered a hindrance to pulling information together to build a data bank that could be used in the future by all valuers. If there is to be a continuous build-up of valuation data, then there must be constant exchange of field data between valuers as they practice.

5.8.5. Number of Comparables Used (Q. 19)

Since the more comparables a valuer considers in his market analysis the more reliable his conclusions about the market is, the respondents were asked to state how many comparables that they usually consider in their valuations. 46 (75%) respondents stated that they normally use 1-5 comparables; 8 (13%) said they adopt between 6 and 10 comparables; 4 (7%) indicated between 11 and 15 comparables; only 1 said they use 1 (2%) comparable; while 2 (3%) said they normally select between 20 and more comparables. These are shown in Figure 5.19 below.
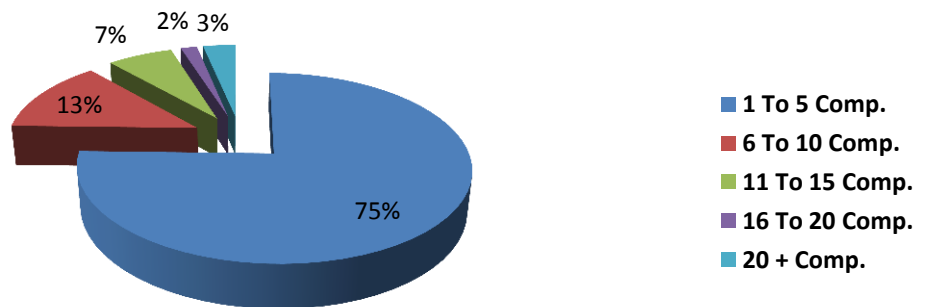
Figure 5.19: No. of Comparables Used for Valuation Analysis

Source: Field Data (2013)

All (100%) of the expert interviewees stated that they considered the nature of the real estate and the general availability of comparable data when deciding on the number of comparables to utilise in their valuations. This was summed up by RESP3 when he stated that

"....in valuing wetlands, an estimate of the potential income will determine the investment value, the information about potential income will be extracted from the locality but the valuer's experience will check any excesses".

On his part, RESP12 said

"We will establish income profile for the last 3years before applying the investment method".

An analysis of these responses indicates that the expert valuers were not committed to any number of comparables as being the minimum required for any valuation. From the dominance of 1-5 comparables in the responses to the questionnaire survey, and the fact that many valuers adopted non-market valuation techniques in their valuations as stated in 3.2, it can be inferred that generally valuers rely on only very few comparable data in analysing the market for any contaminated wetland where they attempt to value comparatively. This result is not surprising, considering the peculiarity of contaminated wetlands, the near absence of any market for it in the Niger Delta, and the dearth of market data in the Nigerian economy generally.

5.9. Summary of Findings:

The objective of this chapter is to ascertain the methods of valuation used by valuers to determine the compensable value of the damages due to contamination of wetlands. To determine the method used requires knowledge of the valuation practice adopted for compulsory acquisition and contaminated land valuation. This review indicates that valuers usually seek investment value when valuing contaminated land and special value rather than statutory value when determining value in compulsory acquisition assignments. In choosing their method of valuation, valuers use the pre-determined compensation rates method in compulsory acquisition assignments, as this is the method dictated by the enabling law. Though it is not clear how the rates adopted are determined, the policy makers and the IOCs appear satisfied to the chagrin of land owners. This lays the foundation for conflict between acquiring authorities and the land owners. Also since the valuation method is statutorily determined, the law thus determines the purpose, basis and method of valuation, thereby discrediting professional valuers' competence. This practice reduces valuation to a mere mathematical process without any professional input of valuers. The resultant value for compensation is usually inadequate and fails the test of equity and fairness and does not place the recipients in the position they were before the acquisition.

For valuing contaminated properties and wetlands, there appears to be no uniformity of practice as the questionnaire respondents said they use the pre-determined compensation rates method while the expert interviewees said they use the investment method without

stating how they determine the inputs to the method. While commenting on the significance of wetlands, it was confirmed that wetlands are extremely important for supporting the ecosystem, indicating the need to reflect the value of the ecosystem in valuations in the form of determining the total economic value. It was revealed that wetlands are predominantly used for agriculture thus lending credence to the dominant occupation of the inhabitants of the Niger Delta being fishing and farming.

Generally, only few practicing valuers undertake the valuation of wetlands to determine the compensable value due to damages due to contamination as there was a manifest absence of knowledge of wetlands empirics and an expressed need for wetlands economics to be included in the training curricular of valuers in the Niger Delta region. Contamination was usually confirmed by observing tell-tale signs like discoloured/polluted water observed visually to establish a prima-facie case of contamination while scientific reports were relied on to establish the impact of the contaminating incident. It was found that valuers usually anchored their valuation practice, relying on methods they have previously used and methods other valuers use, but valuers' training and the practice environment dictated by the prevailing statutes dictate their attitude to any particular assignment. While valuers said they use comparables, they confirmed the dearth of suitable data that could enhance their valuations. These findings thus answered the stated objective of as determining the valuation methods in use in the Niger Delta. The next chapter will identify the valuation stakeholders in the region.

CHAPTER 6.   STAKEHOLDERS OF CONTAMINATED WETLANDS IN THE NIGER DELTA REGION

6.1. Introduction:

The use of land in the Niger Delta region of Nigeria, usually involves different stakeholders each with a different set of objectives for wanting and using the land. Since the objectives differ, it becomes necessary to identify and isolate the various stakeholders and their reasons for participating in the use of land in the region. This chapter reviews who the stakeholders of a contaminated land in the region are and their respective influences, and continues the examination of the valuation methods being used to value contaminated land in the damage assessment process introduced in the last chapter. The influence of the stakeholders on the valuation process is also examined and drawing from the results of the analysis of the questionnaires and the expert interview, it will be shown which stakeholder's influence dominates the valuation scene in contaminated land valuations.

Land in this study is seen as an economic concept sometimes referred to as real estate and defined by the IVSC (2007) as consisting of the earth's surface, the space beneath which extends to the centre of the earth, and the space above which extends to the sky and as modified by the land policy of Nigeria as contained in Cap L5 (LFN, 2004). This law as stated in Section 3.2 now defines the ownership of land and the rights attached to the ownership which now determines the interest that is affected by any contamination incident and the subject interest to be valued. The discussion of stakeholders of contaminated land is therefore as it pertains to this modified interest in land in the Niger Delta. Stakeholders as defined in section 3.15 in the context of this study refers to the parties that are affected or likely to be affected by the activities taking place on any land in the region and includes the communities, families and individuals holding an interest in land; the IOCs who require and use the land for their business endeavours of oil prospecting and development; the State Governments in whose territory the land situates and in whom the radical title over the land is vested; the Federal Government in whom the right to all minerals underneath the earth is vested; the Professional Valuers who advice on value matters; other professionals involved in land adjudication matters like Lawyers,

Land Surveyors, different types of Engineers, etc.; Non-Governmental Organisations and Advocacy groups like Friends of the Earth and Amnesty International and the general public at large who suffer the adverse effects of any contamination by virtue of the effect of such hazards on the environment and the economy in general.

Real Estate refers to land and all things that are a natural part of the land e.g. trees and minerals, as well as all things attached by people like buildings and site improvements including services to a building (IVSC, 2007, p.168). It includes all attachments, both above and below the ground. Real Property as a legal concept differs from real estate and refers to all the rights, interests, and benefits related to the ownership of real estate, while Property Rights are the rights related to the ownership of real estate like the right to develop or not develop the land, lease, sell, give away, farm it, mine it, alter its topography, subdivide it, assemble it, to use it for waste disposal or to choose not to exercise any of the rights. While real estate is a physical concept, real property is a non-physical concept and may be held separately from the real estate. Ownership of both real estate and real property is usually evidenced by some documentary evidence now known as either a Certificate of Occupancy or a Certificate of a Customary Right of Occupancy, depending on whether the land is situated in an urban or local government area respectively. It is not uncommon to encounter a separation of ownership between the real estate and the real property. Where a contamination occurs, it is usual to account for both interest holders in the determination of the damages suffered as a result of the contamination. As stated in section 3.2.2 above, somebody may own the land while another may farm on the land, another may own a fish pond or animal trap, and the family owns the economic trees on the same land. All these owners will need to be accounted for in the damage assessment process in compliance with the World Bank OP.4, the IVSC (IVS, 2007, p. 172) specifies that the property rights to be valued, must be identified. To ascertain whether valuers account for such dichotomy of ownership, the respondents were asked about the various stakeholders of land and the type of landed interest that they hold.

As stated in section 3.2.1, land is owned by an individual in the Niger Delta due to such individual being a member of a family in a given community. This communal tenure determines the particular influence that any individual can exert on the valuation process as such an individual's rights are determined by the customary laws of the community. In some communities, only the family from where the individual secured his interest and the individual will be entitled to claim for any damages as the former will claim for all public

goods like streams, rivers, water channels, economic trees etc., while the later will claim damages to any development he has effected on the land like buildings or any type of structures, farms and the plantings within the farm, personal fish ponds, etc. In more inclusive communities, the community will own economic trees like raffia palm, oil palm, trees like oil-bean, iroko, irvingia-ivorensis, etc., and community roads and beaches. These ownerships entitle such owners to be involved in any dealings on such land hence they are considered as stakeholders. The State governments are the trustees of all land within the territory of their state and are also responsible for the peace and security of all occupants and business operators within their respective states. The Federal Government of Nigeria is the custodian of all oil minerals and other minerals subsisting under the earth in Nigeria by virtue of Cap. P10 and Cap. M12 respectively. By this position she regulates and superintends oil operation activities in the country, in addition to her being in a joint-venture agreement with all the major IOCs operating in the Niger Delta like Shell BP, Total Plc, Nigerian Agip Oil Company Limited, and Chevron Nigeria Limited. Thus the federal government is both a regulator and a participant in oil and gas operations in the country. These oil and gas companies (referred to is this study as the International Oil Corporations (IOCs)) are the operators of the oil and gas prospecting and development policies of the government. Their operations determine the volume of economic gains made by the Nigerian governments in course of their operations. Valuers like other professionals involved in the oil operations, are consulted when their services are required either during the prospecting or development stages as well as when an oil spillage occurs, when they are required to advice on the amount of compensation payable to beneficiaries who have suffered damages due to the contamination that attends such spillages. In most cases, a negotiation between the land owners and their valuer may not resolve the dispute between the operators and the land owners. In such cases, Lawyers will be required to legally represent the claimants and even institute civil proceedings to secure compensation for his clients. The Advocacy groups, and Amnesty International's help publicise the plight of the inhabitants of the region when an oil spill occurs.

6.1.1. The Importance of Property Rights:

Private property rights are said to be the basis of individual freedom and economic security, without which there is no way to check the power of the state over the individual (Coffman, 2002). This is a direct influence of the philosophy of John Locke (1632-1704), which emphasised the importance of private property rights and self-interests. De Soto

(2000, p.35) reports that a research by the Institute of Liberty and Democracy in Peru showed that the total value of property held, but not legally owned, by the poor of the developing nations and former communist countries is at least $9.3 trillion. De Soto noted that 9.3 trillion dollars was about twice as much as the total circulating U.S. money supply at the time, and very nearly as much as the total value of all the companies listed on the main stock exchanges of the world's twenty most developed countries. It was more than twenty times the total direct foreign investment into all Third World and former communist countries in the ten years after 1989 and forty-six times as much as all the World Bank loans of the past three decades. Finally, it was ninety-three times as much as all development assistance to the developing nations from all advanced countries during the same period. While commenting on De Soto's work, the World Bank (2002) observed that "While the concept seems simple, very few property owners actually hold official government-licensed titles outside the United States, Canada, Australia, Western Europe, and Japan. De Soto estimates that nearly five billion people are legally and economically disenfranchised by their own governments. Since these people do not have access to a comprehensive legal property system, they cannot leverage their assets to produce additional wealth. They are left with what De Soto calls "dead capital".

When asked to identify the types of property rights that exist in the Niger Delta, the respondents to the questionnaire survey all confirmed that the rights subsisting under the Land Use Act (CAP. L5, LFN, 2004) are the only property rights they encounter. This was corroborated by the respondents to the expert interviews when 100% of the respondents confirmed that only customary and statutory rights of occupancy now exist in the Niger Delta, since the land use act became effective. Respondent No. 6, stated thus:

> "*The Land Use Act 1978 regulates the types of interests that can subsist in Nigeria and the Niger Delta. They are the Statutory Rights of Occupancy which may be: Deemed Rights of Occupancy or Customary Right of Occupancy for land that is non-urban. Government has right to designate an area as urban and non-urban area; other rights arising from these rights of occupancy are sub-leases, assignments, and leases for a term of years.*"

This means that only limited interests in land now exist in terms of ownership but the property rights still exist in most rural (non-urban) areas where farming and fishing are practiced. Thus it is common practice for the families that own an oil polluted land to retain ownership of all economic trees, while the owners of any man-made structure will

own such a structure and whoever planted crops on the land will own such crops. It follows that the only equitable solution when a contamination occurs, is for the valuer to assess each party's interest separately, though in practice, this creates some difficulties as stated by Respondent No. 11 when he said that

"*Where there are multiple interests on the land, compensation to each of the interests becomes impossible to determine e.g. a leaseholder who creates a sublease after securing a loan and develops, who get paid the compensation?*"

Though the last chapter examined the various valuation methods in use in the Niger Delta region, this chapter will extend the examination to ascertain whether there is any particular method being used by the valuers practicing in the region, when valuing a contaminated land. It is hoped that this examination will reveal the need or otherwise of a framework for wetland valuation by expert valuers when a contaminating incident like oil pollution affects any wetland. To be able to examine the influence of these stakeholders, we need to first examine the characteristics of the valuers who returned their questionnaires.

6.2. Valuers' Characteristics:

To be able to categorise the questionnaire respondents, they were asked to state their role, selecting from a list of ten different roles stated in the questionnaire. After reviewing the responses, it was discovered that they broadly fell into five categories of Consultant Estate Surveyor and Valuer; Estate Surveyor and Valuer; Properties/Facilities Manager; Property Developer/Manager; and Agency Surveyor. Valuers are generally referred to as "Estate Surveyors and Valuers" and the Consultant Estate Surveyors and Valuers are those valuers who have been in professional practice for a minimum of ten (10) years. Valuers are defined by the IVSC (2007) as "a person of good repute who:

- has obtained an appropriate degree at a recognised centre of learning, or an equivalent academic qualification;

- has suitable experience and is competent in valuing in the market and category of the asset;

- is aware of, understands, and can correctly employ those recognised methods and techniques that are necessary to produce credible valuation;

- is a member of a recognised national professional valuation body;

- pursues a programme of professional learning throughout his or her career; and

- follows all the requirements of the IVSC code of conduct.

To this will be added in the case of Nigeria that the person must have been duly registered under Cap. E13 (LFN, 2007), by the Estate Surveyors and Valuers Registration Board of Nigeria (ESVARBON). By definition, a Consultant Estate Surveyor and Valuer must in addition to all the above requirements, have practiced for a minimum of ten years. All the other categories of practice fall under the general purview of the Valuer though some professionals designate themselves as such. Thus a Properties/Facilities Manager trains as a Valuer but specialises in either property management which entails the following responsibilities (Eberlin, 2014); Being

- Responsible for Rent-Property managers are responsible for setting the initial rent level, collecting rent from tenants and adjusting the rent.

- Responsible for Tenants-One of the main responsibilities of the property manager is to manage tenants. They are involved in all capacities, from finding the tenants, dealing with complaints to initiating evictions;

- Responsible for Maintenance and Repairs-Property managers are responsible for the physical management of the property, including regular maintenance and emergency repairs;

- Responsible for Knowledge of Landlord-Tenant Law-Good property managers have a thorough knowledge of state-wide and national laws regarding the proper ways to: Screen a tenant, handle security deposits, terminate a lease, evict a tenant, comply with property safety standard;

- Responsible for supervising other employees and the vacant properties;

- Responsible for Managing the Budget/Maintaining Records-Property managers are responsible for managing the budget for the building and maintaining all pertinent records;

- Responsible for Taxes: The property manager can assist the property owner with understanding how to file taxes for the investment property, the property manager can also file taxes for the property;

or functions as a facilities manager where he:

- manages refurbishment, renovations and office moves;
- manages general maintenance e.g. landscaping
- makes sure that the building meets health, safety and environmental standards
- finds ways to save energy in the building
- manages facilities such as cleaning, waste disposal, catering and parking
- manages budgets
- Manages others including security personnel, caretaker, reception desk and visitors
- Manages office systems e.g. IT and remote working.

A Property Developer/Manager is also a specialisation of the valuer and entails buying and selling buildings and land and arranging for the construction of new buildings. In the management role, the property manager performs the functions listed above under Properties/Facilities Manager. An Agency Surveyor is a valuer who specialises in buying and selling of real estate on behalf of a client who may be a landlord or a tenant. Bearing these in mind, the respondent valuers were asked to state their respective specialisations and the results are as shown in Table 6.1 below:

Table 6.1: Classification of Respondent Firms

Specialisation	Frequency	Percentage
Estate Surveyor and Valuer	1	1.6
Property/Facility Manager	17	27.9
Consultant Estate Surveyor and Valuer	43	70.5
Feasibility Study Experts	0	0
Estate Surveyor and Valuer	0	0

Source: Field Data (2013)

From Table 6.1 above, it can be seen that there is no noticeable distinction between the various respondents as all appear to be undertaking the same type of assignments. The distinction between a Consultant Estate Surveyor and Valuer and the Property /Facility Manager appears to be only in name since by definition, the Consultant Estate Surveyor and Valuer functions not just as a valuer but must have practiced in all facets of Estate

Surveying and Valuation before attaining the status of a Consultant. Thus all the respondents were Valuers with different years of professional experience.

6.2.1. Professional Experience of Respondents:

To ascertain their respective years of experience, respondents were asked to state how long they have been in practice and how long they have worked for their present firm. Figure 6.1 shows 13.1% representing 8 respondents have between 0-5 years' experience; 24.6% (15) respondents possess between 6-10 years' experience; 18% (11) have 11-15 Years' experience; 1.6% (1) respondent have between 16-20 years' experience ; while 42.6% (26) respondents have more than 20 years' experience. This confirms the assertion above that most of the respondents are qualified valuers and that the designation as Property/Facility Managers did not detract from this fact. From Figure 6.1 it can also be inferred that most of the respondents are in fact Consultant Estate Surveyors and Valuers with many years of professional experience and should speak authoritatively about the subject of contaminated wetland valuations in the Niger Delta. This fact is corroborated by Figure 6.1 which shows the length of term of employment in the respondent firms.
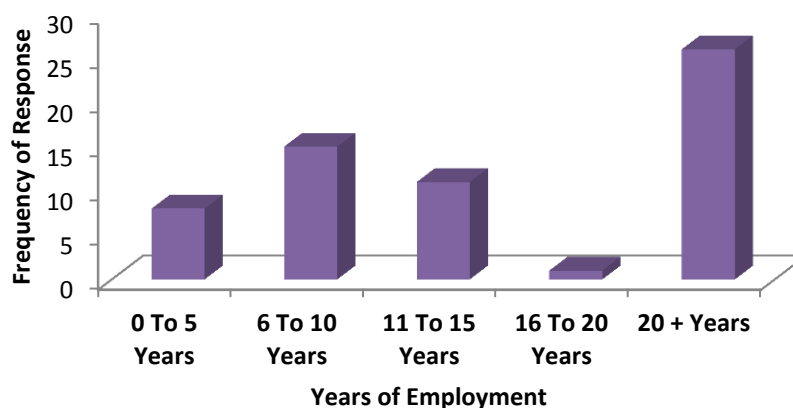
Figure 6.1: Experience as Professional Valuers

Source: Field Data (2013)

6.2.2. Years of Employment in Present Firm:

When asked about their professional experience as revealed by their years of practice as valuers in the firms, 37.7% (23) said they had worked for only between 0-5 years in their present firms; 11.5% (7) had worked for between 6-10 years; 3.3% (2) had worked for

between 11-15 years; 9.8% (6) had worked for between 16-20 years; while 37.7% (23) had continuously worked for more than 20 years in their present firm. It is generally assumed that the shorter the duration of employment in a firm, the less experienced a practitioner is likely to be and vice versa. There appears to be an increase in the number of young entrants into the profession and this means that their experiences are also limited. The high percentage of valuers with only 0-5 years' employment is consistent with the finding in Section 5.6 that most valuers do not possess sufficient knowledge of wetland valuations, as they may not have encountered it during their limited professional life span. When combined together, it shows that about 50.8% (31) had worked for over 10 years in their present firm, confirming their professional rating as consultants. This also confirmed that the firms which are the unit of analysis of this study do possess the appropriate experience to value wetlands if they are asked to, based on their length of practice as valuation firms. Figure 6.2 shows the duration of employment of the respondent firms.
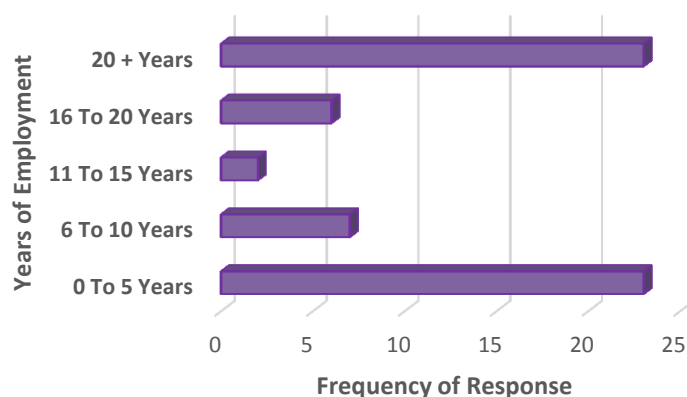
Figure 6.2: Experience as Valuation Firms

Source: Field Data (2013)

6.3. Identification of Influential Stakeholder

As stated above, the major stakeholders in the valuation of contaminated wetlands in the Niger Delta are the IOCs who prospect for and produce oil and gas in the region, the Federal Government who is in a joint-venture relationship with the IOCs, the Property right holder or land owners on whose land oil operations occur, and the Professional Valuers who advice the parties on the value of properties damaged due to contamination.

When a contaminating incident like oil pollution occurs, either the landowners or the IOCs may engage a valuer to advice on the damages due to contamination. Where the IOC

accepts liability for the spillage under the law (Nigerian Minerals and Mining Act, 2007 and Cap. P10 LFN. 2004), they will instruct a valuer to value the contaminated properties and advice on the damages due to the contamination. The valuer may also be instructed by the property right holder who has suffered losses due to the contamination. In either case, the valuer is expected to exercise his/her professional judgement in ascertaining the losses and ascribing monetary values that will constitute the damages to be paid.

Table 6.2: Most Influential Stakeholder

Stake-holder	Least Influential	Slightly Influential	Some-what Influential	Very Influential	Extre-mely Influential	Total Res-ponses	RII	Ran-king
OGC	9	7	3	23	19	61	0.72	2nd
PRH	34	11	7	2	7	61	0.39	4th
FGN	9	5	15	19	13	61	0.67	3rd
PESV	9	4	8	7	33	61	0.79	1st

Source: Field Data (2013)

Legend:
OGC = Oil and Gas Companies (IOCs)
PRH = Property Right Holder (Landowners)
FGN = Federal Government of Nigeria
PESV = Professional Valuer
RII = Relative Importance Index

6.3.1. Influence of IOCs:

The process of determining this damage has been a major source of conflict between the land owners and the IOCs, with the Government pretending to be neutral. The government is thought to be pretending because she is in partnership with the IOCs and yet she is supposed to supervise their operations and mediate between them and the land owners in case of any disagreement, but the government acts as both a polluter and a mediator, two roles that can hardly be performed by one party. In view of these considerations, the respondents were asked to confirm which stakeholder was more influential in the choice of valuation method when contamination occurs and their responses are shown in Table 6.2

above. In choosing the stakeholder with the most influence, 9 (%) respondents said the IOCs were of the least influence; 7 (%) said they were slightly influential; 3 (%) said they were somewhat influential; 23 (%) said they very influential; and 19 (%) said they were extremely influential. It appears those who said the IOCs are not influential are only projecting their professional ego and not being sincere with their response, in view of their preference for a valuation method dictated by the government and the IOCs as found in Section 5.8.1. Since the IOCs operate and develop oil wells in the Niger Delta and are the major polluters causing contamination in the region, and they also dictate the method of valuation mostly adopted in their operations, it is only true to say that they are the most influential stakeholders in the selection of a valuation method. This contention appears to have been disproved by the result of the ranking of the responses by means of their relative importance as shown in Table 6.2 above.

6.3.2. Influence of Property Right Holders:

When asked about the influence of the Property Right Holders (Land owners), 34 ((%) of the respondents said they were the least influential; 11 (%) said they were slightly influential; 7 (%) said they were somewhat influential; 2 (%) said they were very influential; while 7 (%) said they were extremely influential. These responses are only a confirmation of the reality of nature as most property right holders hardly know anything about valuation and so should not be expected to know which method to insist on it being used for damage assessments. It is possible though for property right holders who initiate a valuation to influence for instance it has been shown by Levy and Schuck (1999) and Gallimore (1996) that clients intentionally and unintentionally influence the outcome of a valuation. Kinnard et al. (1997) found that 415 of 500 US valuers were influenced by clients to revise their valuations, depending on their perception of the importance of the client to them. Levy and Schuck (1999) also found that the level of influence exerted on Australian valuers by their clients was dependent on the clients' level of sophistication, valuer characteristics, available information to both clients and valuers, and the purpose of valuation. Babawale (2008) found that the more crucial a valuation is to the client, the more likely the client's pressure and influence on the valuer, and Babawale and Omirin (2012) found that client pressure on valuers was a source of valuation inaccuracy in Nigeria. The finding from this study seems to contradict the above findings but this can only be explained by the class of respondents who completed the questionnaire who appear to conceal their failings for professional ego preservation.

6.3.3. Influence of Federal Government:

The role of the Federal Government in the valuation process appears less clear as they function directly as regulators and indirectly as initiators of a valuation exercise in view of their status as co-owners of the IOCs. 9 (%) respondents said that the Federal Government of Nigeria was the least influential among the stated stakeholders; 5 (%) said they were slightly influential; 15 (%) said they were somewhat influential; 19 (%) said the government was very influential; while 13 (%) said they were extremely influential. It can be inferred from this finding that those who said the government was the least and slightly influential are not very conversant with the operations of the Nigerian Land and Oil operations., as it is curious to observe that a regulator who is also a part operator will not be interested in any valuation outcome that will be affecting its business interests, when she has the power to enforce a more favourable outcome. That the government has not challenged the use of the OPTS pre-determined compensation rates by the IOCs is a manifestation of the government's complicity in its use to minimise payments to the land owners. As found in Section 5.7.2, most valuers accept the OPTS rates as a creation of law rather than a decision of a trade group in a Chamber of Commerce and Industry.

6.3.4. Influence of Professional Valuers:

In choosing a valuation method to adopt in assessing damages due to contamination, the respondents stated that the professional valuer is the most important stakeholder with 33 (54.1%) saying the valuer is extremely influential; 7 (11.5%) saying he is very influential; 8 (13.1%) saying he is somewhat important; 4 (6.6%) saying he is slightly influential; and 9 (14.8%) saying he is the least influential. While the high percentage response that considered the valuer to be extremely influential is understood from the fact that they (valuers) should protect their profession, it is very bothersome to observe that as much as 9 (14.8%) felt valuers are the least important, though this can be understood from the point that most of the respondents have only practiced for not more than 5 years and can be considered to be neophytes in the field, and also from the fact that most valuers see the partnership between the Federal Government and the IOCs as dictating what must be in the industry since the apparatus of State appears to be behind the operations of the IOCs. It is also an evidence of the youthful stage of professional valuation practice prevailing in the Niger Delta where the professionals hardly uphold their professional opinions in the bid to secure patronage from the IOCs and the dependence on the use of the pre-determined compensation rates as a method of valuation in assessing damages rather than utilising a

professionally dictated valuation method as shown in Section 5.7.2 To reconcile the differences between the respondents, their various responses were ranked using the Relative Importance Index (RII) of Lim and Alum (1995). By computing the RII of each of the variables (stakeholders), it was discovered that the professional valuers are the most influential stakeholders according to the questionnaire respondents.

6.3.5. Stakeholder Influence by Expert Valuers:

When the same question was posed to the expert valuers interviewed, they were all agreed that the major cause of contamination in the Niger Delta is oil spillage from the facilities of the IOCs, succinctly put by RESP 8 as:

> "*the major sources of contamination in the Niger Delta is crude oil pollution and degradation from gas flaring caused by the multinational oil companies operating in the region, and the poor illiterate natives usually engage us as professionals,*"

and accepting the "Polluter Pays Principle", they stated that the property right holder (landowner) is the most influential stakeholder in the choice of valuation method as they usually initiate most contamination valuations once they notice a spill on their land. The reason for this insistence is their belief that the IOCs (polluters), always try to avoid responsibility for payment and are usually reluctant in initiating a valuation unless when they cannot escape responsibility. In the words of RESP 11:

> "*polluters do not want to pay and hardly initiate a valuation as they will usually attempt to cover up any pollution to avoid responsibility for damages and payment of pollution tax imposed on IOCs by the government, so landowners usually initiate a valuation when a pollution occurs.*"

This view was supported by RESP 12 when he stated that:

> "*the multinational companies usually try to downplay any pollution and even endeavour to deny responsibility, so landowners who observe the pollution contact professionals for advice.*"

On the issue of influence in the choice of valuation method since it is accepted that initiating a valuation does not necessarily dictate the choice of valuation method, 8 (67%) said that the IOCs exert the most influence while 4 (33%) said the property right holders are more influential in the choice of valuation method and this was stated by RESP 1 who has consulted severally for the IOCs thus:

> *"valuers are normally retained by the polluter and most rural dwellers rely on whatever the oil companies decide to pay, the oil companies insist on values complying with their budget and the use of OPTS rates"*

This view was corroborated by RESP 6 who is a professional in a government establishment thus:

> *"the initiators of a valuation are the landowners, individuals or communities. The oil companies may appoint their own valuers to advise them on what value to use for negotiations with the landowners but sometimes the oil companies give guidelines to their valuers on how to value for them and usually may take unilateral decisions about how much to pay, which is usually accepted by the natives."*

RESP 5 who is a Consultant Valuer also confirmed this view by stating that:

> *"the multinational oil companies sometimes provide outdated rates as OPTS rates that are not professionally ascertained or determined and not backed by any law, to their valuers to use in their valuations because they are so powerful that they can dictate and influence policies. They even get away with murder".*

From all the citations above, it is obvious that the expert valuers interviewed were not agreed on the most influential stakeholder in the choice of a valuation method for use in assessing damages due to contamination, though a majority (67%) of them identified the IOCs as being most influential, a view that differs from the questionnaire respondents' view. This result can only be rationalised on the basis that the questionnaire respondents were mindful of their professional calling and stated their perception of the ideal situation while the expert valuers stated what the reality in practice is. Consequently it can be seen that in the Niger Delta region, the IOCs are the most influential stakeholders in the choice of a valuation method in contamination damage assessment, perhaps due to the dictatorial nature of the operational land law (Cap. L5, LFN, 2004) as pointed out by RESP 11 when he stated thus:

> *"while the Oil Pipelines Act provides for the valuer to determine the basis and methodology for assessing damages on contaminated land, the Land Use Act (Cap. L5, LFN, 2004) is dictatorial as it determines the purpose, basis, and the*

methodology of valuation, thereby removing the professionalism in valuation practice."

Having ascertained that the IOCs are the most influential stakeholders in choosing a valuation method and also influencing valuation practice in the determination of damages due to contamination, it is necessary to examine how satisfied the stakeholders are with the damage assessed with the pre-determined rates of compensation and the way valuation is practiced. The next section now examines the satisfaction of the various stakeholders.

6.4. Stakeholder Satisfaction with Assessed Damage:

To be able to ascertain the satisfaction or otherwise of the different stakeholders, the respondents to the questionnaire were asked to rate the level of satisfaction of the stakeholders on a 5-point Likert scale ranging from Very Dissatisfied, Not Satisfied, Undecided, Satisfied, to Very Satisfied. Figure 6.3 shows a bar chart of the responses.
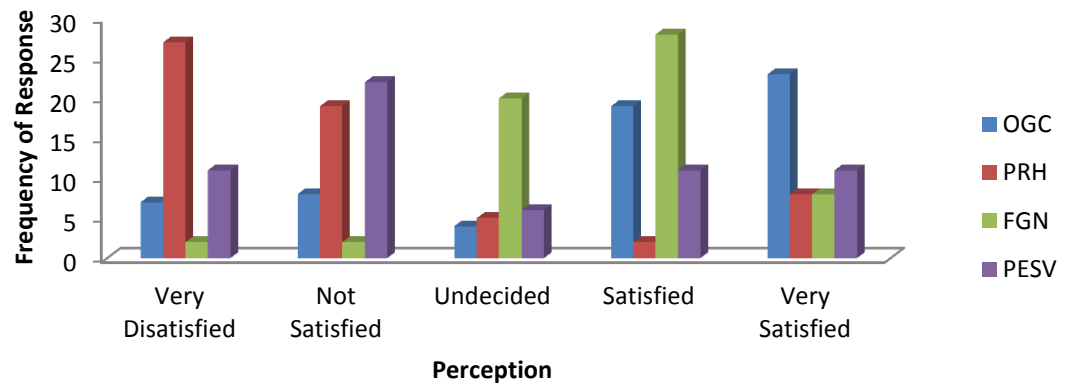
Figure 6.3: Stakeholder Satisfaction with Damage Assessment

Legend

OGC = Oil and Gas Companies (IOCs)

PRH = Property Right Holder (Landowners)

FGN = Federal Government of Nigeria

PESV = Professional Valuer

6.4.1. Satisfaction of IOCs:

From the responses, 7 (11.5%) respondents said the IOCs were very dissatisfied with the damage assessed; 8 (13.1%) said they were not satisfied; 4 (6.6%) said they were

undecided; 19 (31.1%) said they were satisfied; while 23 (37.7%) said they were very satisfied. This response is curious as the IOCs were said to be the most influential in the choice of valuation method in the damage assessment process and should be satisfied with the outcome of the process they have engineered. Grouping the responses into two of Very Dissatisfied and Very Satisfied will show that 15 (24.6%) said the IOCs were very dissatisfied while a majority 46 (75.4%) said they were Very Satisfied. The possible reason why some are very dissatisfied with the damage assessed may be due to the constant rejection of damages and the conflict that such rejection engenders. Such conflicts manifest in the numerous litigations pending in the High Courts and give a lot of adverse publicity to the IOCs resulting in the emergence of pressure groups and non-governmental organisations (NGOs) who have now become stakeholders. An example of the adverse publicity is given to the Bodo Oil Spillage of 2008 by Amnesty International (2009). Such publicity dents the reputation of the IOCs and they would rather not have them. There appears to be a disagreement among the IOCs as to the continued use of the OPTS rates for determination of compensation in their operations hence each now finds a way to minimise the resistance of the landowners by offering them enhanced damages in addition to some minor contracts and some developmental projects. An example is the payment of a gross sum of N2.5 million per Hectare by Total Plc while Shell Nigeria still pays only N1.0 million per Hectare, and Nigeria Agip Oil Company Limited pays N1.5 million per Hectare. This disagreement has also resulted in the OPTS rate not being revised since 1998, whereas it was originally intended to be reviewed annually.

6.4.2. Satisfaction of Property Right Holders:

The responses showed that the property right holders are very dissatisfied with the damages assessed currently, as 27 (44.3%) respondents said this class of stakeholders were very dissatisfied; 19 (31.1%) said they were not satisfied; 5 (8.2%) said they were undecided; 2 (3.3%) said they were satisfied; and 8 (13.1%) said they were very satisfied. Grouped into two, this result shows that an overwhelming 51 (83.6%) were very dissatisfied, while only 10 (16.4%) were very satisfied. From the discussions of stakeholder theory in Section 3.15, it was shown that the property right holders are influential but do not possess any power to enforce their wishes and this is confirmed by the high proportion of very dissatisfied responses shown above. This level of dissatisfaction is cited by Idemudia and Ite (2006b) as a major source of conflict between the IOCs and the inhabitants of the Niger Delta region, and confirms Ebeku (2001a) that

the property right holders have been deprived of the benefits they used to derive from their land when oil prospecting and production companies entered any land. When compared to the influence of the IOCs in 5.2 above, it can be seen that the property right holders have every reason to be dissatisfied as they possess the land, suffer the damage and yet have no influence on the choice of valuation method and therefore cannot influence the outcome since they are contending against the government indirectly and the judicial process being so protracted, these landowners discover that they cannot even sustain a litigation against the IOCs who are partners with the government who should be adjudicating and creating the enabling environment for peace to reign between the operators and the land owners. The present situation where the polluter determines what to pay as damages cannot give satisfaction to the landowners, hence the degree of dissatisfaction.

6.4.3. Satisfaction of the Federal Government:

The Federal Government fared differently from the property right holders as only 3 (6.9%) said they were very dissatisfied; 2 (3.3%) said they were not satisfied; as much as 20 (32.8%) were undecided; 28 (45.9%) said they were satisfied; and 8 (13.1%) said they were very satisfied. When combined to only two groups, it can be assumed that only 5 (8.2%) said they were very dissatisfied, while majority 56 (91.8%) said they were very satisfied. Viewed from this angle, the result is not unexpected as it is the government that assumed the radical title to land, promulgated the laws that have extinguished the rights of land owners, and participating in the oil production process indirectly rather than regulating the operations of the industry. It is also the government that has failed to prevail on the judiciary to be fair in the dispensation of justice, since she controls the judiciary. As a stakeholder, the government has power, legitimacy and urgency and is thus a dominant stakeholder who not only prescribes rules and regulations for the oil industry, but also prescribes the valuation methods to be used and specifying compensation rates. It does appear that this is a very powerful stakeholder who is very satisfied with the damage assessment process, no doubt due to its power.

6.4.4. Satisfaction of Professional Valuers:

The respondents generally felt that this stakeholder was not very satisfied with the current damage assessment process, as 11 (18.0%) said that they were very dissatisfied; 22 (36.1%) felt they were not satisfied at all; 6 (9.8%) said they were undecided; 11 (18.0%) said they were satisfied; and 11 (18.0%) said they were very satisfied. Grouping the responses into two halves indicates that a majority 39 (63.93%) said that they are very

dissatisfied with the current practice, while 22 (36.07%) felt this stakeholder was very satisfied. Being valuers, it is surprising that such a high percentage said that they were very satisfied. The higher percentage that were very dissatisfied with the process must have been reacting to the usurpation of their professional role by the government and the IOCs who unilaterally fix pre-determined compensation rates that are forced on the valuers they retain to advice on the damages due to contamination. That valuers feel dissatisfied with the process but yet accept patronage from the IOCs is an indication that there is no uniform standard of practice and also the non-existence of any standard prescribed by the profession to be adopted for such valuations as is provided by the RICS Red Book and the USPAP for the United Kingdom and American Valuers respectively. It also an indication that the valuation profession is not yet developed in the Niger Delta to the extent that valuers can shun patronage from one organisation and yet find jobs elsewhere as is the case in the developed economies.

6.4.5. Stakeholder Satisfaction by Expert Valuers:

To ascertain whether the various stakeholders were satisfied by the current practice, the expert valuers were asked to confirm whether the payment of damages due to contamination was seen as a right or a privilege by the polluters, noting that the government was both a regulator and indirectly a polluter. 3 (25%) of them said that the payment of damages as compensation due to contamination was seen by the polluters as a right of the landowners, but 9 (75%) disagreed saying that the landowners were always underpaid and have to fight most times before they got any payment. RESP 5 stated thus:

> *"The IOCs see the payment for damages as a privilege as they not only dictate the rates but also the amount they are willing to pay, sometimes against the recommendation of their consultant valuers."*

This means that this respondent is saying that both the land owners and the professional valuers are very dissatisfied by the process but the IOCs and their government partners are very satisfied.

Supporting this view, RESP 8 stressed that:

> *"Oil companies prefer to prolong any litigation and stay in court for as much as 50 years and are not always eager to pay unless when it is very glaring that their business will suffer if they do not pay."*

The magnitude of ill feeling was captured by RESP 12 when he summarised it thus:

" the multinational oil companies (IOCs) do not believe the natives are entitled to any compensation for any damage they suffer due to any contamination as they view such payments as a privilege. Since the government is both a regulator and a shareholder in the IOCs, they are not interested in the payment of any compensation and do not defend the citizens as it is done internationally."

The full import of these assertions is that the expert valuers feel that only the IOCs and their government partners are very satisfied with the current damage assessment regime and since the landowners have to fight to wrestle and damage payment from the polluters, they are very dissatisfied just as the professional valuers whose professional skills are dispensed with by the IOCs and the government in the current process of assessing damages. This finding confirms the assertion of George (2009) that the fixed rates contained in the OPTS rates produce a compensation that is negotiable, though in practice , the bargaining positions of the parties are hardly comparable, thus making any negotiation unbalanced in favour of the IOCs and the government. But that the IOCs are reluctant to pay damages arising from their activities and their own chosen valuation methodology is a further confirmation of the absence of any generally acceptable valuation standard that both polluters and landowners on the one hand and the valuers on the other hand acknowledge as the yardstick for measuring the outcome of any valuation to assess damages due to any contamination. It also shows that the valuers are not playing their roles as impartial umpires in the dispute about what an appropriate damage should be in any contamination controversy as their valuations are not acceptable to any party to the dispute since there is no reference standard in use in the Niger Delta.

6.5. The Need for a Practice Standard:

Having realised that there is no practice standard as it obtains in advance economies available to valuers in the Niger Delta in particular and Nigeria in general, it became necessary to examine if the practitioners would welcome such a standard. Respondents were asked if they agreed that there is need for a Practice Standard that will specify the valuation methods that should be adopted for valuing contaminated Wetlands by indicating their opinion on a Likert scale with options as Strongly Disagree, Disagree, Neutral, Agree, and Strongly Agree. Figure 5.4 shows the responses.
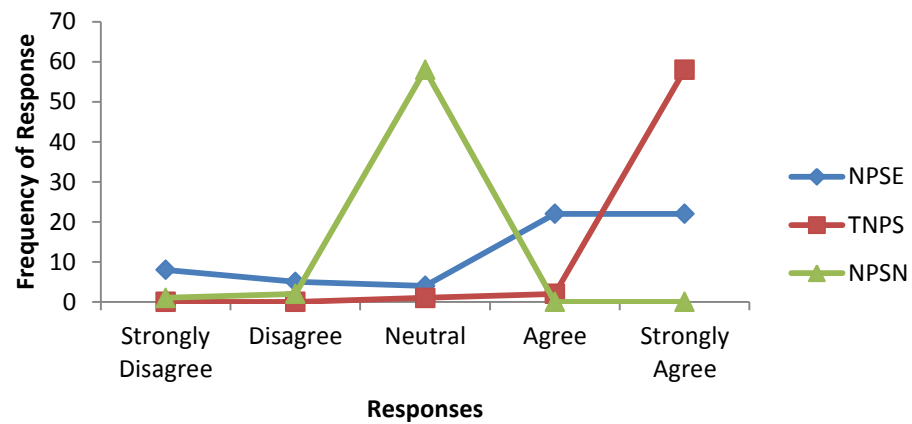
Figure 6.4: The Need for a Practice Standard

Source: Field Data (2013)

Legend

NPSE = No Practice Standard Exists

TNPS = There is Need for a Practice Standard

NPSN = No Practice Standard Needed

6.5.1. No Practice Standard Exists:

8 (13.1%) respondents said they strongly disagreed that any practice standard exists; 5 (8.2%) disagreed that no practice standard exists; while 4 (6.6%) were neutral. Taken together this means that as much as 17 (27.9%) strongly disagreed that any standard exists, meaning that they said that there is an existing standard of practice available in the Niger Delta region. 22 (36.1%) said they agreed that there is no practice standard existing; while 22 (36.1%) strongly agreed that no practice standard existing. Taken together, a vast majority of 44 (72.2%) strongly agreed that there is no practice standard existing. This response lends credence to the non-uniformity of approach in valuing contaminated wetland to assess damages due to contamination and the dominance of the IOCs and government in choosing a valuation method to use in assessing damages. It also confirms that there is a laissez faire approach in valuation practice among valuers which creates doubts about the relevance of the profession in the development of that region in particular and the country in general and creates the vacuum being exploited by the IOCs to dictate what method that should be used for any particular type of valuation.

Practice Standard Needed:

No respondent disagreed that a practice standard is needed but a vast majority of 61 (100%) strongly agreed that there is need for a practice standard, contending that this would streamline the valuation practice, especially in the area of contaminated wetland valuation. The need for a practice standard necessarily calls for a framework that will lay down the protocol to be followed when a wetland is contaminated in order to obviate any confusion among the stakeholders. Such a framework should guide all the parties identify their roles in the process of assessing damages due to contamination.

6.5.3. No Practice Standard Needed:

The response to whether no practice standard is needed or the alternative that it is needed, was very curious as 1 (1.6%) strongly disagreed that no standard is needed and 2 (8.2%) disagreed that no standard is needed, while 58 (90.2%) were not committed either way and remained neutral. This can be interpreted to mean that all the respondents disagreed that no standard is needed i. e. there is need for a standard.

6.5.4. The Need for a Standard by Expert Valuers:

All the 12 (100%) expert valuers interviewed stated that there was a serious need for a practice standard to guide valuation practices. RESP 7 stated thus:

> *"There are no Institutional guidelines available yet though efforts are being made to formulate some."*

In the view of RESP 11,

> *"there are no institutional guidelines specific to the Niger Delta but a general Valuation Standard exists , though this is not specific to compensation issues."*

While RESP 8 summed up all the views when he stated thus:

> *"there are no professional guidelines to be followed in valuing wetlands available. The ESVARBON was established as a regulatory body but have not been able to set any standards. Even the professional body NIESV have been unable to set any standards for its members to follow. These two bodies should have been able to set up a guideline and standards to be adopted by valuers in the Niger Delta region. The IVSC \standards are limited in their applicability to the region."*

When both the questionnaire respondents' and the expert valuers' are compared, it is clear that they both affirm that there is no practice standard existing presently and thus confirm the different approaches adopted by valuers in the Niger Delta while valuing for any purpose. There was a unanimous agreement on the need to formulate a framework for the valuation of wetlands by the expert valuers in view of the absence of any practice standard. Stressing the point, RESP 3 stated thus:

> *"we should determine values rather than apply prescribed rates. A framework for valuation by professional bodies will provide a more appropriate value than adopting rates for any valuation."*

On his part, RESP 7 stated that:

> *"the need for a framework is over-due as it will eliminate a lot of guesswork and provide a source of reference and guide valuers in being professionals in wetland valuations."*

Supporting this view, RESP 8 stated that:

> *"if a standard is developed and a framework is designed, it will form a basis to approach the Government to adopt it as a policy document that will guide valuers in their practice, and it will be very useful."*

For wetland valuations specifically, RESP 11 stated that:

> *"there is need for a framework for wetlands valuations as this will enable valuers place appropriate values on wetland resources to encourage their preservation. The framework will standardise the practice of all stakeholders and provide a basis for a review of compensation assessment."*

These views were summed up by RESP 12 when he stated that:

> *"there should be a framework and guideline defining the procedures to be adopted when a contamination occurs. This will also enable valuers value from both the polluters' and the claimants' viewpoints and make it easy for arbitration in case of any disagreement between the parties. This study is overdue since all the practice of valuation has been based on the mainland, neglecting the wetlands which are very useful. The current practice regards wetlands as being useless and the study should critically economic potentials of wetlands."*

6.6. The Need for a Composite Valuation Method:

Having established that there is no extant practice standard and that there is need for a framework for wetlands valuation, it became necessary to ascertain whether the absence of a framework was due to a weak educational foundation or a chance occurrence. The respondents were asked to confirm their agreement or otherwise on a Likert Scale, whether the current valuation methods are sufficient, whether taught valuation methods are not comprehensive, and whether there is any need for a composite valuation method to value wetlands. Figure 6.5 below shows the responses.
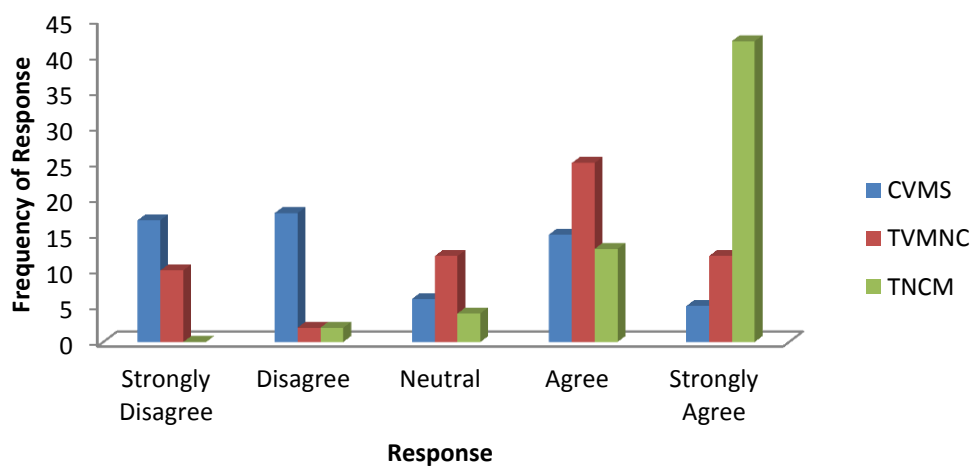
Figure 6.5: The Need for a Composite Wetlands Valuation Method

Legend:

CVMS = Current Valuation Methods are Sufficient

TVMNC = Taught Valuation Methods are not Comprehensive

TNCM = There is Need for a Composite Valuation Method

6.6.1. Adequacy of Current Valuation Training:

When asked whether current valuation methods are sufficient to use in valuing contaminated wetlands, 17 (27.9%) respondents said that they strongly disagreed that the current valuation methods are sufficient; 18 (29.5%) said they disagreed; 6 (9.8%) were neutral; 15 (24.6%) said they agreed that the current valuation methods are sufficient; while 5 (8.2%) said they strongly agreed that it was sufficient. When these responses are grouped into two groups of strongly disagrees and strongly agree, it shows that 41 (67.2%) respondents strongly disagreed that the current valuation methods are sufficient while 20 (32.8%) respondents strongly agreed that the current methods are sufficient. This result

indicates that majority of the valuer respondents said that the current valuation methods are insufficient and would welcome an improvement. This result is consistent with the poor appreciation of the need to value wetlands professionally exhibited by the respondents when selecting a method of valuation to use in valuing contaminated wetlands and the combined import of the responses from the expert valuers. The response from RESP 4 that:

> *"knowledge about wetland valuation is still at the embryo stage. Valuers in the Niger Delta region need to be better trained for wetland valuations."*

And RESP 5 who said that:

> *Wetlands are difficult to value because of the tremendous natural resources they contain. Valuers training currently is not sufficient for such valuations and only those who develop themselves privately by research and reading wide can undertake wetland valuations."*

For RESP 9 the question of training is very critical to the accurate valuation of contaminated wetlands and he posited thus:

> *"the valuation techniques taught currently cannot accommodate the peculiarities of the Niger Delta region. There is need to integrate the methods of environmental economics with our orthodox valuation training to beef up the valuers' training. Using the knowledge of Environmental economics will help us value resources with no market. Traditional valuation techniques are geared to valuing goods and services with a market. Though the use of methods that simulate the market assist us place value on non-market goods and services, there is need for a paradigm shift in our training."*

Supporting this view, RESP 12 stated that:

> *"more knowledge of Environmental Economics needs to be included in valuation training curricular as most young valuers can hardly analyse data and tend to apply published data hook, line , and sinker. Prospective valuers should be more analytical as the use of published data needs to be cross-checked to verify their reliability depending on the context of publication, location etc., a valuer needs to ascertain the applicability of published data before adopting it. Wetland goods and services depend on the specific location and the practice of the natives."*

Commenting on the knowledge base, RESP 10 said that:

> *"the adequacy of the valuers' knowledge base is currently insufficient as valuers rely mostly on assumptions. The academic institutions and the professional institution needs to collaborate to improve the training requirements for certification of valuers."*

There is a widespread feeling among the expert valuers that the knowledge base of valuation practice needs to be improved and made more inclusive and far reaching in terms of the subject coverage. It is felt that valuers need to be trained in the techniques of analysis applicable to agricultural goods and services as these are the main resources prevalent in the Niger Delta wetlands. The use of techniques like the human capital approach of valuing life needs to be included as most contamination of wetlands affects the life and livelihoods of inhabitants of the region like it was experienced in the Exxon Valdez and the Horizon Deepwater oil spills (Cleveland et al., 2010).

6.6.2. Incomprehensive Valuation Training:

Respondents were asked to indicate whether the taught valuation methods are comprehensive or not. As shown in figure 6.5 above, 10 (16.4%) strongly disagreed that taught valuation methods are not comprehensive; 2 (3.3%) disagreed that taught valuation methods are not comprehensive. This indicates that this group 12 (19.7%) feel that taught valuation methods are comprehensive and need not be altered. This view contradicts the expressed opinions that the current knowledge of wetland valuation is insufficient as stated above. Contrary to this are 12 (19.7%) respondents who were neutral; 25 (41.0%) who agreed that taught methods are not comprehensive; and 12 (19.7%) who strongly agreed that the taught valuation methods are not comprehensive. Grouped together, this indicates that a majority 49 (80.4%) respondents strongly agreed that the taught valuation methods are not comprehensive. This means that majority respondents are not satisfied with the current training curricular is insufficient and need improvement if valuers are to be able to value contaminated wetlands and confirms the views of the expert valuers cited above. To be able to develop new valuation curricular requires a framework which will set out the steps and process to be adopted in valuing a contaminated wetland.

6.6.3. Need for a Composite Valuation Method:

Have confirmed the need for a framework and the insufficiency of taught valuation methods, it became necessary to inquire about the need for a composite method of valuing

contaminated wetlands. When asked, no respondent strongly disagreed with the need; 2 (3.3%) disagreed; 4 (6.6%) were neutral; 13 (21.3%) agreed there was the need; and 42 (68.9%) strongly agreed. Taken together, this means that virtually all the respondents 61 (100%) strongly agreed that there is the need for composite valuation method for use in valuing contaminated wetlands. This confirms the views of the expert valuers already referred to in 6.6.2.

6.7. Summary of Findings:

This chapter identified the Stakeholders in a contamination incident to include the IOCs, the State and Federal Governments; professional valuers; other professionals like Lawyers, Land Surveyors, Engineers of different specialisations, Non-Governmental Organisations. In reviewing the characteristics of the respondents to the questionnaire, the chapter defined a valuer as "a person of good repute who:

has obtained an appropriate degree at a recognised centre of learning, or an equivalent academic qualification;

has suitable experience and is competent in valuing in the market and category of the asset;

is aware of, understands, and can correctly employ those recognised methods and techniques that are necessary to produce credible valuation;

is a member of a recognised national professional valuation body;

pursues a programme of professional learning throughout his or her career; and

follows all the requirements of the IVSC code of conduct.

To this will be added in the case of Nigeria that the person must have been duly registered under Cap. E13 (LFN, 2007), by the Estate Surveyors and Valuers Registration Board of Nigeria (ESVARBON). By definition, a Consultant Estate Surveyor and Valuer must in addition to all the above requirements, have practiced for a minimum of ten years. It was stated that valuers specialise in different aspects of their profession like Valuation, Properties/Facilities Management, Property Developer/Management, Agency, or Feasibility Studies. The distinction between a Consultant Valuer and the Property /Facility Manager or any of the other specialisations appears to be only in name since by definition, the Consultant Valuer functions not just as a valuer but must have practiced in all facets of Estate Surveying and Valuation before attaining the status of a Consultant. Thus all the

respondents were Valuers with different years of professional experience. A review of the professional experiences of the respondents, revealed that majority of them had been in practice as valuers for more than 20 years and have been in the employment of their present firms for either 0-5 years or more than 20 years.

Among the identified Stakeholders, it was discovered that the IOCs are the most influential stakeholder in the choice of a valuation method for use in assessing damages due to contamination. It was also discovered that both the IOCs and the Federal Government are more satisfied with extant method of assessing damages but they are always reluctant to pay even the damages assessed by use of valuation methods they have also prescribed. There was no agreement between practicing valuers on which valuation method that should be adopted in assessing damages due to contamination, as there was constant under-cutting between firms as they contend for patronage by the IOCs when any contamination occurs. The main reason for the present quagmire is the absence of any valuation standard that will regulate which method those valuers may adopt in valuing contaminated wetlands and which will be known to both land owners and the polluters alike, to produce an unbiased value and minimise disputations between them. There is also the need for a framework that will guide valuers in undertaking the valuation of contaminated wetlands and also inform the polluters of the necessary protocols to follow in the event of any occurrence of a contaminating event.

To prepare valuers for the task of valuing contaminated wetlands, there is the need to revise the valuation curricular used in training valuers and formulating a composite valuation method that will be used in such valuations as the extant valuation methods are insufficient to accommodate all the peculiarities of contaminated wetlands.

The next chapter will propose a framework for valuing contaminated wetlands to determine the compensable value due to contamination damages and a composite valuation method that can be adopted for such valuations.

CHAPTER 7.   PROPOSED FRAMEWORK FOR VALUING CONTAMINATED WETLANDS

7.1. Introduction

The aim of this study is to develop a framework for the assessment of damages due to contamination of wetlands in the Niger Delta region of Nigeria. Assessment of damages to a natural resource like a wetland, is required to take cognisance of the statutes defining natural resource damage liability, available guidelines for such assessments, established scientific practices for measuring injuries and prevailing economic practices for valuing non-marketed goods/services and judicial precedents (Kopp and Smith, 1993, p. 118). Assessing damages entails valuing the contaminated wetland with the professional skills of a valuer by a Professional Property Valuer, who is defined by the IVSC (2007) as "a person who possesses necessary qualifications, ability, and experience to estimate property value for a diversity of purposes including transactions involving transfers of property ownership, property considered as collateral to secure loans and mortgages, property subject to litigation or pending settlement on taxes, and property treated as fixed assets in financial reporting". The respondents to the questionnaire survey used for this study and the key informants interviewed as experts were all such qualified persons as shown in Section 6.3.1.It has been shown in Section6.5.3 that there are no professional practice standards available in the Niger Delta that can be used by professional valuers to value contaminated wetlands, it was also shown that there is need for such a practice standard as the available International Valuation Standard (IVS) issued by the IVSC, does not sufficiently cater for contaminated wetlands. There is need to improve the scope of the valuation curricular, to provide for the acquisition of wetland valuation techniques, to enrich the training of valuers in the region and prepare them for valuing such properties. In view of these findings, there is need to adopt a composite valuation method in the valuation of wetlands in view of the peculiar physical composition of wetlands. In the context of this study, the aim of valuing a contaminated property (irrespective of the type), is to ascertain how the value of the property has changed due to the contamination. This

chapter attempts to propose a framework which will serve as a protocol for the valuation of contaminated wetlands in the Niger Delta region.

A framework by definition, is a logically structured representation of the concepts, variables and relationships involved in a study with the purpose of clearly identifying what actions need to be taken and what should be explored, examined, or measured in the process of solving a real world problem and will present a detailed protocol that will improve the accuracy and precision of valuation practice (Kummerow, 2006). In trying to propose the framework for valuing contaminated wetlands, this chapter draws from the findings of the literature reviewed earlier on, the findings from the analysis of the questionnaire survey and the expert interviews conducted, and relates each outcome to the other in other to show their interrelationships, purpose and the processes involved in developing a composite method of valuation for use in valuing contaminated wetlands. The prescription of a valuation protocol for any type of real property valuation is within the competence of each State that subscribes to the IVS and GN 1-9 states that "it is not the objective of GN 1 to provide specific Guidance as to how a given valuation should be performed or to supersede the qualifications for and procedures applied by Valuers, as these are addressed within the training programmes of each State".

7.2. The Proposed Framework

The proposed framework consists of three broad phases ranging from the occurrence of the contaminating incident through the investigative phase, remediation phase, to the valuation phase. The existence of a wetland is taken for granted in the Niger Delta, thus the first phase includes the reporting/ occurrence of a contaminating incident, the initial observation stage, the preliminary survey stage, and possibly provision of relief materials to affected persons; the second stage involves the topographical survey to determine extent and boundary of the site, detailed site investigations of the contaminated site to detect extent and impact of the incident through a Scientific Study or Environmental Impact Analysis, the design of a remediation plan and the actual remediation of the site; and the third stage which entails the appraisal/valuation process which spans from the definition of the valuation problem, data collection, data analysis, selection of valuation methods and development of a composite valuation method suitable to the case to the determination of the value of the wetland in its non-contaminated and subsequently contaminated state.

PHASE 1: OCCURRENCE OF EVENT

PHASE 2: INVESTIGATIVE PHASE

PHASE 3: VALUATION

WET LANDS

POLLUTION CONTAMINATION

Preliminary Survey

Relief

Detailed Investigation

Design Remedia-Tion Plan

Remediatio-n Cost

EIA/Scientific Study

Topographical Survey

Define Problem

Determine Land Composition

General Data

Data Collection & Property Description

Site Specific Data

Analyse Data

Establish Cost, Use & Risk Effects

COST APPROACH
MAKT. APPROACH
INCOME- APPROACH

Property Based Valuation Method

Select Valuation Method

Wetland Based Valuation Methods

M.P.APP.
M. C. APP.
R. C. APP.
P. F. APP.
BEN. TRANSFER

Diminution In Value

Damage Due to Pollution

Impaired Value

Figure 7.1: Proposed Framework before Validation
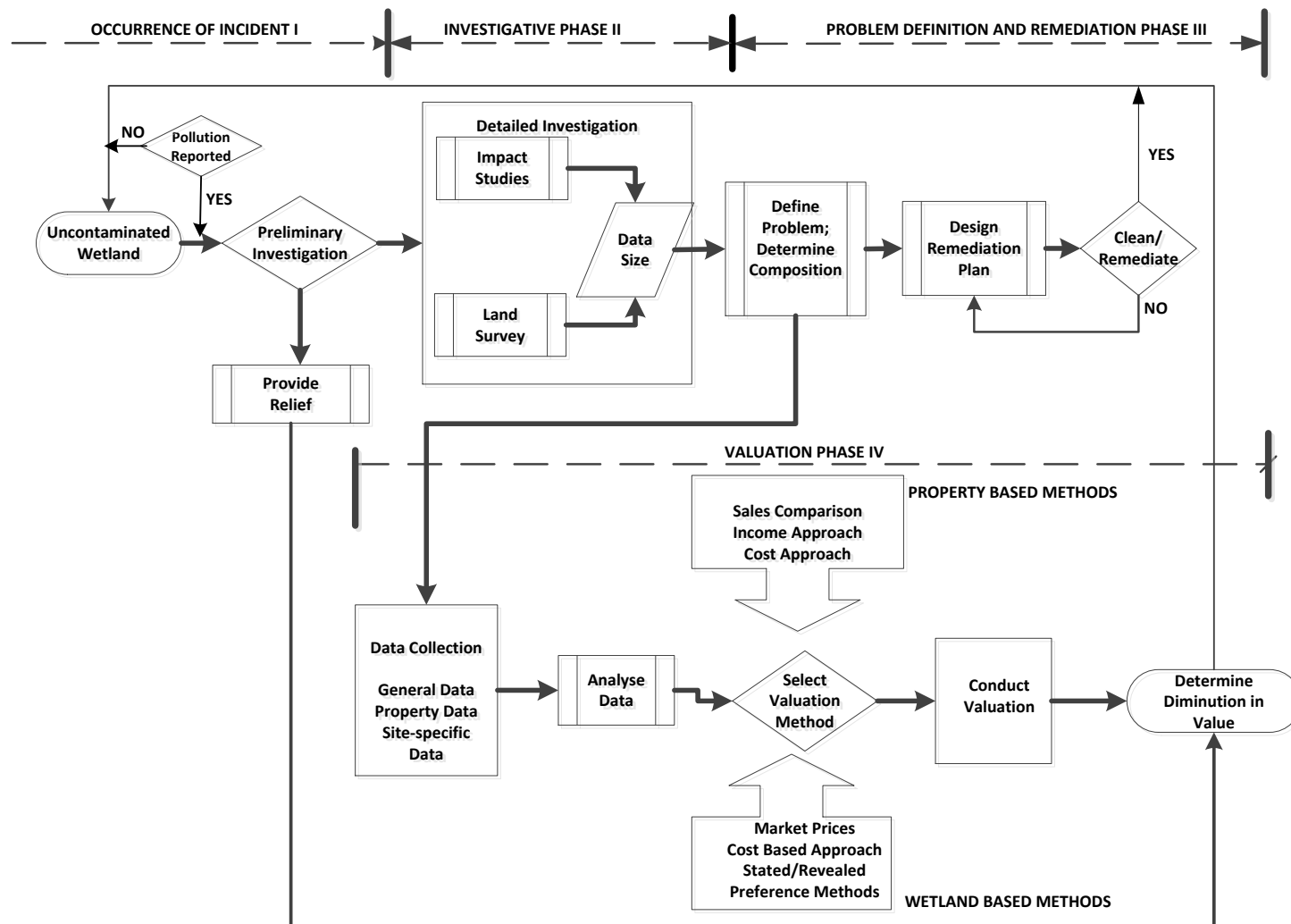
Figure 7.2: Proposed Framework for Determining Compensable Value

The following sections will describe the detailed composition of each of the stages.

7.2.1. Phase 1: Occurrence of Contamination

This framework that is being proposed is to be used in assessing a contaminated wetland and the process commences with the occurrence and notification of a contamination incident to the party responsible for the facility causing the contamination. The study will concentrate on only wetlands affected by contamination caused by oil spillages which occur from the oil prospecting and development activities of the IOCs. Land contamination is defined by the Environmental Agency (2004) in its broadest sense as a general spectrum of site and soil conditions which can include areas with elevated levels of naturally occurring substances, as well as specific sites that have been occupied by former industrial uses, which may have left a legacy of contamination from operational activities or from waste disposal, and also include areas of land in which substances are present as a result of direct or indirect events, such as accidents, spillages, aerial deposition or migration. Thus defined, contamination involves three basic components of contaminant, a receptor, and a pathway. A contaminant describes any substance in, on, or under the land with the potential to cause harm or to cause pollution of adjoining waters and may include crude petroleum and crude petroleum pipelines; a receptor which is something that could be adversely affected by a contaminant like people, an ecological system, real property, or a water body; a pathway which is the route or means through which a receptor can be exposed or affected by a contaminant. Contamination usually impacts the surrounding environment. The European Commission (EU Commission, 1993) defines an environment as including abiotic and biotic natural resources like air, water, land, fauna and flora, and the interaction between these factors and goods that are part of the cultural heritage and characterise the landscape. The Business Dictionary.com (Dictionary, 2012) defines an environment as the sum total of all surroundings of a living organism, including natural forces and other living things, which provide conditions for the development and growth as well as of danger and damage. This study adopts the definition which describes an environment as the interaction of all living species on a given space, be it land, water or air. Environmental Contamination is the **a**dverse environmental conditions resulting from the release of hazardous substances into the air, surface water, groundwater or soil. Generally, the concentrations of these substances would exceed regulatory limits established by the appropriate federal, state, and/or local agencies, USPAP, A. O. 9, 2005.

When land owners or interest holders in land or the pipeline-surveillance agent, notice any contamination on their land especially the deposit of crude hydrocarbon deposit and as evidenced by any of the indicators listed in Section5.8.1, they will report to the IOC who operates the facilities in the neighbourhood. The operator of the facility from which the discharge occurred, will on receipt of the report conduct a preliminary survey to ascertain the veracity of the report and confirm the seriousness of the reported contamination, to enable it decide whether any palliative actions need be taken, to protect lives and property in the impacted communities. This survey will constitute an Environmental Site Assessment which will provide data and information about the environmental history and condition of the impacted environment as a result of (1) site reconnaissance and interviews with current occupiers of the land as well as officials; (2) ascertaining the potential for contamination does exist by physical inspection not including any testing or remediation; and (3) determine who should be entitled to any assistance in the form of palliative measures like supply of portable water or provision of temporary accommodation/ medical treatment or assistance, or the provision of relief materials like food, warm clothing or beddings. The qualitative data collected at this stage, will determine the next step.

7.2.2. Phase II: Detailed Investigation

Upon the confirmation of the veracity of the contamination report, the IOC will initiate a detailed investigation of the incident in compliance with the applicable laws. The first action here will be the identification of the Stakeholders of the incident, which will include the operators of the oil/gas field, the landowners/users, and the parties responsible for the incident.

The oil industry operations in the Niger Delta as in other parts of Nigeria is subject to certain laws such as the Oil Pipelines Act (Cap. 07, LFN, 2004), the Petroleum Act (Cap. P10, LFN, 2004), and the NOSDRA (Establishment) Act (No. 72, Vol. 93, 2006). There are other regulations like the Environmental Guidelines and Standards for the Petroleum Industry in Nigeria (EGASPIN) of NNPC (2002), issued by the Department of Petroleum Resources (DPR). The DPR supervises all petroleum industry operations and enforces the other laws, while NOSDRA is a government agency, is responsible for compliance with the environmental laws affecting the petroleum sector. This agency is charged in Section 7 (b) with the responsibility to undertake surveillance, reporting, alerting and response activities as they relate to oil spillages. It is supposed to ensure that Nigeria's National Oil

Spill Contingency Plan is implemented in line with international conventions. EGASPIN is supposed to supervise the IOCs' compliance with laws and regulations affecting the oil industry like requiring them to inspect pipelines monthly, take precautions to prevent pollution, and prepare an oil spill contingency plan. The IOCs are responsible for containing and recovering all oil spills in their operational area and pay compensation where the spill is the operator's fault, and restoring to as much as possible, the original state of the contaminated environment. EGASPIN requires that when a spill occurs, the IOC shall:

- Submit an Environmental Evaluation Report on the oil spill to a panel of experts from the DPR and the operator;
- If the spill occurs on water, contain it immediately to prevent further spreading. On land, containment ditches could be used to prevent groundwater contamination;
- If water is affected underground, inform the DPR within 24 hours. An Initial Remediation Plan should be activated to prevent contamination, assess the contamination on site and then start "recovery, treatment, monitoring and rehabilitation programmes";
- Commence clean-up within 24 hours of a spill occurring and ensure no additional damage is caused;
- Keep a daily log of events until the clean-up is concluded;
- Submit the costs of the clean-up to DPR; and
- After the spill, the operator responsible must conduct an Environmental Evaluation (Post Impact) Study.

When a major spill occurs, NOSDRA is required to assess the damage to the environment and undertake a post-spill impact assessment, and also advise the government on the health impacts of the spill and ensure remediation and mediate between the communities and the IOCs. This implies that NOSDRA should participate in the detailed investigation which should be done in the presence of impacted community since the IOC will try to identify the receptor. This stage follows the discovery of a Recognised Environmental Condition (REC) during the preliminary survey phase and the aim of the investigation is to ascertain the point of spill, determine the contaminant, source and volume of spill, the receptor and the pathway. Some of the receptors may be source, non-source, adjacent, or proximate properties. A source property is the site from which the spill occurred. A non-source property is a property contaminated along the flow of the spill but not being the source of the spill. An adjacent property is not contaminated but shares a boundary with a

contaminated property while a proximate property is neither contaminated or sharing a boundary with a contaminated property but is located in the same neighbourhood as a contaminated source property (Bell, 2008, pp. 148-149). REC describes the presence or likely presence of any hazardous substances or petroleum products on a property under conditions that indicates an existing threat of a release, a past release, or a material threat of a release of any hazardous substances or petroleum products into structures on the property or into the ground, groundwater or surface water of the property (Appraisal Institute- ASTM, E1527, 2014) as stated in (Environmental) The investigation at this stage may involve actual testing of soils, groundwater, and other media to determine the existence or non-existence of hazardous constituents; involve sampling of soils and ground water according to accepted protocol to make some determination; on-site and off-site testing of samples in approved laboratories as considered suitable and shown in a Post Impact Environmental Study. This is basically a quantitative stage and includes commissioning of the detailed topographical survey to delineate the contaminated boundaries of the receptors, design of the remediation plan for the entire receptors, and possibly the commencement of the remediation process. This stage utilises various professionals like soil scientist, environmental scientists, hydrologists, land-surveyor, ecologists, fisheries scientists, biologists, chemists etc.

7.2.4: Phase III: Remediation:

The actual remediation of the site commences when the results of the detailed investigation stage indicates the presence of concentrations of hazardous materials over the regulatory thresholds and thus define the nature and extent of the contamination and its remediation; it will continue until the concentrations of hazardous substances are reduced to their regulatory standards; and may continue until after the clean-up of the receptors. The results of this stage will inform the actual valuation process, as this stage provides the required input data that is necessary for determining the damages suffered due to the contamination.

7.2.5: Phase IV: The Appraisal Stage:

Whipple (1990) opined that fields of study like Valuation which are fundamentally healthy exhibit a process of intellectual growth and development. This growth involves rethinking the process followed by professional valuers in executing valuation assignments to meet the needs of their clients, avoid malfeasance and enrich their practice, and this is what the

proposed framework is designed to achieve. This is necessitated by the cry of inadequacy of the compensation paid as damages due to oil pollution contamination and a general feeling that traditional valuation methods were not serving clients' needs and the need to provide a protocol for defining and solving valuation problems within a logically coherent frame of reference. To do this, the valuer is required to follow a protocol diligently as detailed below.

7.2.5.1: Definition of Problem:

Every appraisal/valuation problem is unique and the adequate solution of the problem is dependent on the concise definition of the problem and the correct identification of the stakeholders. A valuer retained to advise on the value of a contaminated wetland or any property, needs to first ascertain what the client's problem is and in the case of a contaminated wetland, this might be to enable the client know the damages suffered due to the contamination.Graaskamp (1992), stated that the definition of the valuation problem leads in turn to the definition of the most appropriate value sought by the client. Coleman (2006) indicated the elements necessary for problem identification to include (1) client; (2) the intended use of the valuation report; (3) the intended use of the valuation opinion and conclusions; (4) the type and definition of value; (5) effective date of the valuer's opinion and valuation; (6) the subject of the assignment and its relevant characteristics; (7) assignment conditions like any assumptions made about the title and rights that are the subject of the valuation which may be intrinsic to the definition of the problem or externally imposed like a restrictive covenant. In a typical contaminated wetland valuation, the problem may for instance be defined as "A Valuation to determine the Damages due to Oil Pollution of Bluegrass Wetlands for Compensation Purposes". To effectively define the valuation problem will entail answering the questions in Figure 7.1 below.

Table 7.1: Definition of Valuation Problem

Question	Action
WHAT	Identity of the real estate
	Identity of interest to be valued
	Definition of Value sought
WHEN	Effective date of valuation
	Date of Valuation Report
WHY	Identity of Client(s) and intended users
	Intended Use of Valuation
HOW	Identification of scope/extent of Valuation
	Assumptions and conditions

Source: Adapted from Schram (2012) p. 73.

7.2.5.2: Determine Land Composition and Use:

This is an extension of the task of defining the subject of the valuation assignment captured under problem definition above. A wetland by nature consists of both an upland portion and a wetland portion that may be put to different uses. This will entail stating the overall size of the contaminated wetland and the size of each component and the current uses and a confirmation of the legality of such uses. To be able to source for comparable data, the valuer will need to determine the alternative uses of the site and the possibility of securing legal permits to use the site for such alternative uses and the financial feasibility of doing so. The valuer needs to confirm that the property is physically suited to the use or the practicability of being adapted to the use. The Niger Delta Wetlands being of two types namely coastal and fresh water wetlands provide numerous goods and services that have an economic value, not only to the local population living in its periphery but also to communities living outside the wetland area. They are important sources for food, fresh water and building materials and provide valuable services such as water treatment and erosion control. Salau (1993) posited that there are 46, 000 plant species, 205 of which are endemic and approximately 484 plants in 112 families in the region, while Kadafa (2012) stated that a large population of the Niger Delta survive on services provided by the Niger Delta wetland like crabs, fish, shrimps, periwinkles, cockles, molluscs, and animals and birds. Gabriel (2004) stated that Coastal ridge barriers, mangrove and fresh water swamp forests characterize the ecology of the Niger Delta and lowland rain forest each of which provides habitation for different species of plants, fish, reptiles, mammals and minerals and that a dense vegetation of mangroves in their marine and brackish habitats found along numerous rivers and creeks have become dependable sources of fuel wood for domestic and small-scale food processing as well as income generation. Similarly, the fresh water swamp forest ecosystem occurring around fresh water creeks and lakes support women's fishing activities, gathering of sea foods, fuel woods, gin distillation from raffia palm trees (Raphia vinifera), collection of African mango seeds, Ogbono (Irvingia gabonensis), snails, weaving of mats and other objects/items from screw pine (Pandus candelabrum), rattan palms and bulrushes respectively. The essence of analysis of the wetland portion is to identify and select the applicable wetlands goods and services since the aim is to determine the total economic value of the wetland contaminated. The analysis will enable the valuer isolate which uses of the wetland that can be valued monetarily to meet the definition of the problem started with. The Ramsar Convention Technical Report Number

3 authored by de Groot et al. (2006) provides the relationship among the various components of a wetland.

A typical wetland in the Niger Delta is used directly for fishing, agriculture, fuel wood, transport, wildlife, peat/energy, and building. Indirectly they are used as fish nursery, nutrient retention, flood control, storm protection, groundwater recharge, shoreline stabilisation, and external ecosystem support. They have some non-use and existence values where they serve biodiversity, cultural, heritage and bequest uses. These are similar uses listed by. Barbier et al. (1997) Valuers can place values on the direct uses which can be ascribed to individuals, as the indirect, non-use and existence values are mostly public goods.

Since each category of buyer will tend to evaluate properties by particular methods, the valuer will also describe the characteristics of the land and the current market with the identification of the most probable buyer as the more the valuer can duplicate the valuation methods of buyers, the more precise the valuation will be (Kummerow, 1997). Though it may not be possible for the valuer to completely capture all the considerations that can be made by potential buyers, it is also possible that some negative/positive features known to the valuer may not be known to potential buyers thus minimising the risk of making wrong assumptions all the time.

7.2.5.3: Data Collection and Verification:

The data that will be required will cover both general data and site or property specific data, some of which may already exist in the valuer's records and some may be collected afresh. A valuer practising in the Niger Delta, will maintain files containing regional, city and neighbourhood data for the area in which they customarily practice, local construction costs, and potential comparable properties may also be available. Where this is not, the valuer needs to collect general economic data at the national, regional, city, and neighbourhood levels. In some cases international data may also be collected. The data that will be relevant will relate to social, economic, governmental, and environmental factors affecting the subject wetland. Specific data on accessibility of the site to surrounding transportation routes and distance to transport termini will be considered, so also any potential conflict in the means of accessibility will be mentioned. The locational characteristics will be considered to understand the nature of the linkages of uses to the site.

Site/Property-specific data or data more directly relevant to the contaminated wetland being valued and to comparable properties will also be collected. For the land itself, it will include the dimensions, slope, exposure, soil conditions, drainage and the like. Improvement data starting at the boundaries and working inwards will be recorded including a full description of any buildings or structures like fish ponds etc. effort must be made to ascertain the age of any structure to be able to determine approximate cost of construction and depreciation and income and expense data; utilisation histories and every other information that ordinary buyers might likely require to make a decision should be collected.

7.2.5.4: Analysis of Data

Coleman (2006) opined that the goal of an appraisal assignment is a credible opinion of value and not the production of an appraisal report and that the report is merely the means of communicating the results of the appraisal assignment to the client and intended users. In view of this, the data collected above has to be properly analysed and prepared for use in the subsequent valuation. Moreover, the appraiser gathers much of the information needed to adequately describe and analyse any property by personally inspecting the real property. The analysis will involve separating the data into those applicable to the upland component and those applicable to the wetland part, and thoroughly interpretation of all the strengths and weaknesses, the environmental conditions of the site, and interpret the significance of the data to lay a foundation for selecting the best alternative use. For the upland part, the various data collected on the developed structures on the land encompassing its structure, measurements, description, depreciation and use will be assembled together with those of any comparable properties collected. As the valuer is analysing the subject property, he will also analyse suitable comparables where available, to be able to compare and extract market evidence of values.

For the wetland portion, having collected both general and specific data, the valuer will collect supply and demand data characteristic to the most probable market for the wetland. This will be analysed to determine the value contribution of each component of the wetland and every income generating use or potential use of the wetland. It will be necessary to establish as much as possible the inventory of goods and services generated by the wetland and the potential gainers or losers from the presence or absence of the wetland in its present state as well as establish the potentials in the future. Once all these data have been collected, the valuer will be ready to analyse them for use in the subsequent

valuation to determine any loss in value attributable to the contamination. As stated in 7.2.4.3, only the goods and services from a wetland that can be ascribed to an individual will have a market value and require accurate inventory and documentation when valuing a contaminated wetland. The exact composition of each of the components had been listed in Section 3.12.4. The use identified will assist the valuer select an appropriate valuation method to adopt in the valuation.

The analysis of data on contaminated wetlands requires a complete knowledge of the contamination life cycle, which commences from (1) the occurrence of the contamination event; (2) the assessment of the extent and impact of the contamination on the environment, including an estimate of the cost of assessment and the apportionment of remediation responsibility; (3) the remediation or repair stage; to (4) the Post-remediation Stage. Jackson (1998) noted:

> "........environmental factors must be reviewed on a property-specific basis. This includes levels of characterisation of the contamination; the regulatory status of the site, costs, and the length of the remediation effort; approvals and financing of remediation plan; effects on the use of the property during remediation; the availability of indemnification by financially sound responsible parties; and any post closure property use restrictions."

Bell (2008) opined that some detrimental conditions require an assessment like conducting a soil, environmental, or engineering study and that each detrimental condition causing contamination is usually analysed on a case-by-case basis since each condition may have a variety of impacts on value depending on the stage in the contamination life-cycle which can be illustrated as shown in Figure 7.1 below.
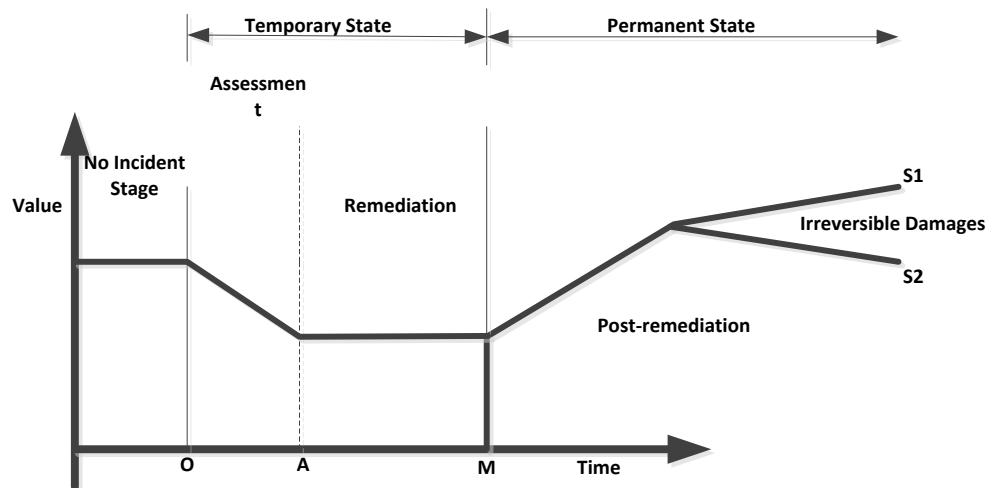
Figure 7.3: Contamination Life-Cycle

Source: Adapted from Bell, 2008 and Defrancesco et al. (2012)

He summarised the impacts to be on cost, use and risk. A valuer needs to note the likely impact of cost, use, and risk, on value caused by the contamination at each stage of the life-cycle thus:

I.   Assessment Stage:

Any contaminated wetland will require conducting a soil, water, environmental, or engineering study to assess the extent and impact of physical damage and all types of contaminants and level of contamination and the cost of conducting the assessment and the responsible party to remediate the site will be determined. Though in the Niger Delta, 'the polluter pays' principle applies, this research finding indicates that the land owners/occupiers may also fund the assessment in some cases. The assessment process may or may not disrupt the use of the property, for instance where the health officials suspect an exposure risk until the site is fully remediated, and the present use may be disrupted until the end of assessment. Bell (2008) notes that the value during this period is often the lowest or the property may be unmarketable due to the possible demand by potential buyers for a discount as an enticement to purchase a property with an unknown extent of damage. The exact impact will depend on whether the property is a SNAP (S-source property; N-non source property; A-adjacent property; or P-proximate property as described in 7.2.3 above). Each of these types attracts different costs, liabilities, and risks. Generally source properties attract more risks than adjacent properties, as stigma is highest immediately after the contamination incident is

known, and will be different from the stigma during remediation and post-remediation. The non-marketability of the contaminated wetland will be due to uncertainty, possible market resistance, project incentive to induce buying with contamination, and the stigma quantification difficulties.

II. Remediation Stage:

This may be active or passive remediation, reconstruction, preventative construction measures or any other remedial measures that may be required (Anderson, 2001). Where the polluters commission the remediation, they may invite bids from clean-up contractors after receiving the initial cost estimate from their consulting Environmental engineers. Where the property owner pays, the cost will be discounted from the valuation. It may be possible to use the contaminated wetland during the remediation, as some methods are non-intrusive while others may require complete or partial vacation of the entire site. Where business is suspended during remediation, then the loss of income and cost of relocation during this period needs to be incorporated into the valuation. Anderson (2001) notes that remediation risks include:

- Project incentive for a buyer to purchase a property that is assessed but not yet remediated;
- Perceived risk to non-source and adjacent or proximal property owners;
- Buyer's contingency or the discount required for taking the risk of remediation cost overruns; and
- Risks of delay caused by a lengthened regulatory approval process or an extended remediation period.

He further posited that remediation risk may decrease as the uncertainty and remediation technique becomes certain and the real estate marketplace becomes more comfortable with the estimate of costs for the type of environmental risks involved. Generally, the valuer needs to assess the possibility of selling during remediation without a discount for risk or with a discount where the management of the risk is transferred to the buyer.

III. Post-remediation (Ongoing) Stage:

After remediation, there may be the cost of monitoring the state of the site in the future. Where these costs are known today, they will need to be adjusted by the

inflation rate to the future date and discounted to their present day values for inclusion in the valuation.

Use-value recovery after remediation may take some time and the valuer will need to accommodate this gradual recovery in his estimate of the total income, until the contamination effect has completely disappeared and the full use value attained. In some cases there might be a restriction of use by law after remediation, for instance where a child-care facility is restricted on a polluted site when the risk of a resurgence of future contamination is suspected. In such cases, the restriction might affect the current or alternative uses and this could lead to a loss in value. This is confirmed by Wilson (1996)'s statement that:

"An environmental risk may result in a change in the highest and best use. In one case, a site had an unimpaired highest and best use '…..for light industrial development' and was valued for $1.75 per square foot. However, because the site was a former municipal solid waste landfill, subsidence and methane gas generation concerns would increase construction costs to achieve this highest and best use so significantly that an altogether different highest and best use would be indicated. The impaired highest and best use was determined to be for '….outdoor storage' and the indicated value was $0.75 per square foot. The difference, $1.00 per square foot, is the cost of a restriction on use resulting from the presence of environmental risk".

Risk measured as stigma, is usually attached to the context of post-remediation. According to Anderson (2001), it is referred to as market resistance and it is a type of risk that could conceivably exist as a result of a history of contamination, although the property has been cleaned to the level of acceptance of government agencies. On his part, Roddewig (1999) describes environmental stigma as an adverse effect on the market's perception of the value of property containing an environmental risk even after clean-up costs have been expended or considered in estimating value. This is measured by the discount the market places on values following the contamination. This discount will depend on whether the damage is considered temporary or permanent. Where damage is considered temporary, it is curable and the cost of such 'cure' will be deducted from the market value. Where the damage is considered permanent, then the loss in value will be the measure of such damages.

Roddewig (1999) summarised the basic questions the valuer should ask as follows:

- Are the sources of the substance or hazards widespread or localised;

- Are the locations well known or carefully documented or of uncertain extent;

- How does the substance get into the environment;

- How does it move through the environment;

- What are the known or suspected impact on health; and

- What remediation techniques were or will be applied?

The factors affecting different stages in the life-cycle of a contaminated property are summarised by Anderson (2001) as a Detrimental Condition Matrix shown in Table 7.2 below.

Table 7.2: The Detrimental Condition Matrix

Element	Assessment	Remediation	Post-remediation
Cost	Cost to assess and Responsibility for action	Remediation costs and responsibility	Ongoing costs and responsibility
	Topographical Survey	Repairs	Operations and maintenance
	Engineering, Water and Other studies	Remediation and Contingencies	Monitoring
Use	All loss of utility during assessment	All loss of utility during assessment	Ongoing disruptions
	Disruptions	Income loss	Material alterations to highest and best use
	Safety concerns	Increase in expenses	
	Use restrictions	Use restrictions	
Risk	Uncertainty factor	Project incentive	Market resistance
	Discount, if any, where Extent of damage is unknown	Financial incentive or Risk, if any, during remediation	Residual discount, if any, due to historical record

Source: Adapted from Anderson (2001)

Having analysed the collected data in this detail, the valuer is then ready to select the valuation methods that will enable him determine the value of the contaminated wetland

7.2.5.5: Selection of Valuation Methods:

A valuer, who has collected field data dictated by the problem defined previously, will proceed to select the relevant valuation methods that will enable him proffer a solution to the identified problem which in this case is the value of the contaminated wetland. Cognisant of the composition of the wetland, the valuer selects from the array of valuation methods available for valuing both marketable and non-marketable goods/services. This

study indicates two broad groups of methods consisting of the normative methods taught to valuers and referred hereunder as 'Property Based Methods' and the ecologists' methods referred to as 'Wetland Based Methods'. These methods have been individually explained in section 3.9.2 but generally will include as follows:

Property Based Methods:

- Sales comparison or Market Approach;
- Income Capitalisation Approach;
- Cost Approach, and while

Wetlands Based Methods are:

- Market prices Approach;
- Cost-Based Approaches
- Stated Pretences Methods; and
- Revealed Preferences Methods.

While the market goods/services could easily be valued with the valuers normative methods, it is not easy to value non-market goods/services. Market goods/services could easily be valued since a market exists for them and methods such as the property-based methods and the market prices and cost based approaches from the wetland based methods can be used. These market based methods rely mostly on historical information on market prices (Ulibarri and Wellman, 1997). For non-market goods/services, there is no market data to rely on and the valuation methods adopt indirect estimates of people's willingness to pay or accept for a good/service like the revealed or stated preferences methods of hedonic pricing or contingent valuation methods respectively. As stated in 3.12.4 a wetland in the Niger Delta consists of both the upland and the wetland and the major goods/services from a wetland were duly listed in section3.12.4 in view of this mixed grill nature of wetlands, this study proposes the selection of a valuation method that will criss-cross the property and wetland based methods of valuation, selecting the most appropriate in each case, and combining to produce a composite method for use in determining the diminution in value of a contaminated wetland.

7.2.5.6: Valuation:

Uba (2010) stated that when contamination has been identified, quantified, and the remediation costs have been identified by a qualified expert, the valuer may be able to

develop an opinion of market value that considers the negative impact on value, and provided a list of notes to guide valuers valuing contaminated properties. This includes:

- An estimate of value as if the contamination has been removed, i. e. as if free and clear of contamination;

- The valuer must rely on the expert advice of environmental and other qualified experts with proper disclosure of the experts' findings, opinions and conclusions on the contamination;

- Realise that the estimated diminution in property value may be more than the estimated costs to remediate the property;

- The valuer may prepare the valuation opinion subject to a hypothetical condition that the property is not impacted by contamination if requested to do so but with full disclosure of the hypothetical condition and the likely effect of the hypothetical condition on the estimate of value.

The IVSC (2007) in its guidance, advices valuers to note the 'peculiarities' of the real estate market in reporting their values, especially:

- The fact that it is the market's reaction to the contamination that the valuer must consider and measure;

- Where market value is sought, the valuer should reflect the market effect of the particular condition or circumstance;

- The valuer must research and reflect the effects of the contaminant on the property in its market;

- The valuer must also note that there can be a difference between general public perception and the actual market effects for the presence of the contamination, so he must avoid generally held public perception which are erroneous but should conduct competent research and reflect market attitudes towards the contamination.

Having considered all the above guidance, the valuer will determine a value consisting of compensable value, restoration costs, and damage assessment costs. The compensable value is the amount of money required to compensate the property owner for the diminution in value and the losses of natural resources/services, between the times of the contaminating incident and when the property value and services are fully restored to their baseline condition. Lipton et al. (1995) define restoration costs (which also include costs of rehabilitation, replacement, and/or acquisition of equivalent resources) include both

direct and indirect costs. While direct costs refer to costs of securing alternative services like extra time travelled to procure drinking water; indirect costs are costs or items that support the selected alternative like the cost of buying a car to carry drinking water from another source. The damage assessment costs are the costs of performing the studies to determine the other costs mentioned above. To determine these values, a composite method as suggested by Akujuru and Ruddock (2014) as a valuation framework, as follows:

The market value of a wetland, is indicated by

$$Vo = (Aw \times \frac{V}{Aw}) + (Au \times \frac{V}{Au})$$

Where

Vo = Market Value of the Whole parcel of land;

Aw = Area of Wetlands;

V/Aw = Market Value per hectare of wetlands;

Au = Area of Uplands;

V/Au = Market Value per hectare of upland.

Where the wetland is contaminated and there is a developed property standing on it, then the compensation should be:

$$\sum(Vp + Vd)$$

Where Vd = Diminution in Value, and Vp = Value of the Contaminated Property, and

$$Vp = \sum(Rc + Ic + Lc + CUc + Yc)$$

Where

Rc = Income and revenue losses from use and occupation of the wetland (compensable value),

Ic = Costs of scientific investigations to determine extent and impact of contamination,

Lc = Legal costs where agreed in advance,

CUc = Clean-up costs to prepare for subsequent use,

Yc = Any other incidental costs not captured above, and

$$Vd = Vo - \sum(Ic + Ri + Mr)$$

Where

Vo = Value of Property unimpaired,

Ic = as above,

Ri = Repair costs to the property,

Mr = Risk associated with market resistance to contamination (determined by the price reduction on contaminated properties when compared to an uncontaminated comparable). The above framework assumes a static one-off determination of value. Taking cognisance of the contamination life cycle shown in Figure 7.1, the actual loss in value will consist of (1) loss during occurrence but before remediation; (2) loss during remediation; and (3) post-remediation loss. The compensable value can thus be determined from the following:

$R_c = Y + Y^{n-m}/n$

Where R_c = Compensable Value,

Y = Net Income from all goods/service in the initial year of assessment,

m = the year of impact being assessed and ranges from 1…..n,

Y^{n-m} = each subsequent year of impact being assessed,

n = the duration of impact as revealed by the scientific studies.

This calculation should be done for each stage of the life cycle to determine the total diminution in value that constitutes the compensable loss.

7.3. Validation of Proposed Framework:

The proposed framework was sent to 15 expert informants purposively drawn from professional and academic valuers, to review and comment on it under the following sub-heads:

1. Clarity of Contents of Framework;
2. Simplicity of Framework for Use;
3. Ability of Framework to meet real life requirements; and
4. Anticipated Usefulness of the Framework.

Out of the number sent out, only 11 responses were received showing a 73% return rate. In the validation questionnaire, the respondents were asked to indicate on a Likert Scale whether it is Poor, Fair, Average, Good, or Excellent, and in addition given the

opportunity to make any further remarks they deemed necessary. The responses were weighted using the Relative Importance Index of Lim and Alum (1995) to reflect the importance of each category of response, relative to others. Table 7.3 shows the analysis of the responses from the returned questionnaires.

Table 7.3: Validation of Proposed Framework

Elements of Response	Excellent	Good	Average	Fair	Poor	Relative Importance Index (RII)
Clarity of Contents	4	7	0	0	0	0.87
Simplicity of Framework for Use	4	2	5	0	0	0.78
Ability of Framework to meet Real life requirements	3	5	2	1	0	0.78
Anticipated Usefulness of Framework	4	7	0	0	0	0.87

Source: Field Data (2013)

7.3.1. Clarity of Contents:

For the proposed framework to be accepted in the IOCs and the valuation profession, users must be able to understand its contents and interpret the sequence of events leading up to the determination of the diminution in value due to contamination. Respondents were asked to confirm whether the contents were clear enough for adaptation and majority of them representing 87% of them, stated that it was clear and understandable. While it is admitted that this response when taken on the average does not represent the entire population, taken individually, it indicates that respondents were completely satisfied with the clarity as 4 respondents said it is excellent and 7 said it is good, with nobody saying that it is average, fair or poor. It is thus obvious that the framework is understandable by those who are expected to use it.

7.3.2. Simplicity of Framework for Use:

In their response to the simplicity of the proposed framework for use, 4 respondents said its simplicity was excellent, 2 said it was good in its simplicity, while 5 said it was average. None said it was fair or poor. When considering all possible responses, the results indicate that 78% of the respondents considered it simple to use to different degrees. It is

not possible for every professional person to understand a particular subject with the same level of understanding, hence a response rate of 78% is considered very high for a concept that is being proposed for the first time. It can thus be said that majority respondents accepted that it is simple to use.

7.3.3. Ability of Framework to meet real life Requirements:

The acceptability of the framework does not confer on it applicability in real life, hence respondents were asked to confirm whether in their opinion, the proposed framework is expected to be practically useful in real life. In their response,3 respondents said it was excellent in meeting real life challenges, 5 said it was good, 2 said it will averagely meet real life challenges, while 1 said it was just fair. None rated it poor, but when all possible responses are taken together, a cumulative response of 78% confirmed that it is expected to meet real life challenges. It can thus be said that majority respondents confirmed that it will meet real life requirements.

7.3.4. Anticipated Usefulness of Framework:

Here the respondents were asked to hazard a guess about the future usefulness of the framework and while 4 respondents said they expected an excellent usefulness, 7 said the anticipated a good use to be made of it. No respondent said that it will not be useful. Reflecting all possible responses, there is an indication that 87% felt that it will be useful in the future, a result which could be said to mean that majority of the respondents anticipate an excellent usefulness in the future.

7.3.5. Comments by Respondents:

Respondents were asked to make any remark they felt like adding to the responses and some of their comments are:

- The design should indicate the conventional shapes in a decision flow process;
- Tying up the provision of relief with the diminution in value as sometimes the value of relief is added to the loss in value;
- The need to reflect a stakeholder identification in the process;
- The ability of the framework to meet real life requirement may be hampered by the absence of appropriate data;
- Fairly adequate to meet a wetland remediation through the compensation programme;

- The need to avoid political interference in the process and valuers being patient to gather requisite data before attempting a valuation may hinder its usefulness.

Most of these remarks have been taken into account in producing the final proposal. The issue of political interference and valuers' impatience are outside the purview of this study, but its emergence does indicate a possible area of further research as to how to minimise the time interval between the activities possibly by the use of a PERTH programme to enable each party proceed with his assignment promptly. The point needs to be made that the valuer must receive the expert opinions of other professionals involved in the process before proceeding to determine the compensable value, if the real impacts of the contamination are to be reflected in the value.

7.4: Summary of Findings:

This chapter set out to introduce the framework developed for the valuation of a contaminated wetland in the Niger Delta. There is generally no transparency and professionalism in the process of valuing a contaminated wetland in the Niger Delta. There is also no defined valuation protocol or professional standard available for the guidance of valuers practicing in the region as there appears to be a poor knowledge base of wetland economics exhibited by practicing valuers. This has created a yawning gap in the training of valuers, necessitating the need for a new paradigm in the valuation of wetlands. So after an introduction to the chapter, the various stages of the proposed framework that will address the problems identified, were described sequentially starting from the occurrence of the contaminating incident, the investigation of the incident, the remediation, and to the valuation of the contaminated wetland, to determine the diminution in value of the wetland, which is similar to the compensable value of the contaminated wetland. In the process, it was shown that there is a life-cycle for a contaminated environment/property and the point made that the diminution in value will differ between the various stages in the life-cycle. During the investigative phase, it was stressed that other professionals with expert knowledge of contamination will need to be consulted for their findings and opinions on the impact of the contamination on the wetland, and their opinions relied on by valuers in determining the defined value. The suggested framework, considers valuation as a problem and follows a systems thinking process in suggesting the various stages that the valuer must cover before valuing like defining the problem, collecting and verifying relevant data, analysing the data, selecting the most appropriate methods of valuation to enable the valuer solve the defined problem, and carrying out the valuation

proper.in analysing the collected data, it was stressed that the valuer reflect the fact that during each stage of the life-cycle, the effects of costs, use, and risk (stigma) will differ. It was also stressed that the valuer is only interpreting market behaviour and must not just adopt the public's perception of the effects of the contamination. Having described the proposed framework, the analysis of the responses to the validation of the framework was done and it is concluded that the framework is clear, simple, is able to meet real life requirements, and expected to be useful in the future. The chapter concluded by suggesting a valuation framework that could be adopted for valuing contaminated wetlands to combine both the valuation of real property and the goods/services collected from such wetlands. The next chapter will conclude this study and proffer some recommendations for the future.

CHAPTER 8. CONCLUSIONS, IMPLICATIONS, CONTRIBUTIONS, RECOMMENDATIONS, AND LIMITATIONS

8.1. Introduction:

An investigation of the valuation practice in the Niger Delta region with particular reference to determining the compensable value of damages due to contamination by oil spillage has been undertaken. A questionnaire survey of valuers practicing in the region was undertaken to ascertain the methods of valuation being used by professional firms to value contaminated wetlands, the identification of a contaminated wetland, the stakeholders of a valuation of contaminated wetlands, and the availability of professional guidelines that will aid valuers in carrying out the task of valuations. To corroborate the results of the questionnaire survey, a face-to-face interview of some purposively selected expert valuers was undertaken simultaneously with the administration of the questionnaires. The fielded questions covered similar areas like the questionnaire including the identification of proprietary rights over wetlands and contamination, the stakeholders of the valuation process, the valuation methods and the availability of institutional guidelines.

The first part of this chapter summarises the main conclusions of the study and draws attention to the implications of the study to policy, practice, and further research. The second section identifies the contributions of the research filling the existing knowledge gap. The final section states the limitations of the research and possible areas of further development of the area of expertise.

8.2. Summary of the Thesis

8.2.1. Main Findings and Conclusions

The findings indicate that Nigeria's economy and its development, depends on the oil/gas industries which are the main economic activities dominating the Niger Delta region of Nigeria's landscape. With the expansion of oil production, the incidence of oil spills has increased in the region, causing a severe environmental contamination, especially to the wetlands. The inhabitants of the region depend largely on the natural environment and strongly feel that the preponderance of oil spills and the rate of environmental

contamination is pushing the region towards ecological disaster. This feeling is compounded by the paltry compensation they receive when any contaminating incident occurs and damages their proprietary rights and developments. The compensations paid result from valuations undertaken by valuers who are instructed to determine the compensable value of damages suffered in the wake of the occurrence of a contaminating incident like an oil spill. Since the valuation is undertaken by valuers, this study was designed to develop a framework that will assist the valuers proceed professionally to determine compensable values of damages due to contamination of wetlands.

Literature on the geography and economy of the Niger Delta region together with the environmental pollution problems were extensively reviewed. Theories like the Corporate Social Responsibility, Stakeholders, Conflict Resolution, and Problem Solving were also reviewed as well as theories of Value and Property Valuation.

The proprietary interests now held by the Niger Delta inhabitants are either customary or statutory rights of occupancy, depending on whether it was granted by the Local or State Government respectively. Such interests are usually compulsorily acquired for oil industry activities and are subject to frequent contamination by oil spills which may occur accidentally or through the deliberate actions of the local people who sabotage pipelines as a mark of protest against the Federal Governments and the International Oil Companies. As part of the palliatives following a compulsory acquisition and the remediating measures following a spillage, a compensation determined by valuers is paid to the disposed and owners of the impacted wetlands. Valuers, who determine the compensation payable in either case, have relied on valuation methods prescribed by law for use in compulsory acquisition instances.

8.2.2. Objectives 1 and 2:

Objective 1 sought to ascertain the practice, purposes and methods of valuing contaminated land in the Niger Delta of Nigeria; and

Objective 2 sought to explore from practice, the methods of valuation for assessing the compensable value of damages due to contamination on wetlands;

A contamination is any recognized physical or nonphysical environmental influence that must be considered to determine value. Contamination may take various forms including physical, aesthetic, and perceptual (IAAO, 2001). Contaminated land in the Niger Delta may include wetlands, farmland, property held for investment, landfills, and industrial

properties that have been so severely damaged that the property is essentially reduced to a "start over" economic category (Del Ross and Consultants)). Valuation today originated from the neo-classical school's valuation theory which sees valuation as the method of estimating, measuring, or forecasting a defined value (AI, 2008).

Value determined by valuers is defined as the most likely price to be concluded by buyers and sellers of a good or service that is available for purchase (IVSC, 2007). Implicit in this definition is the assumption of a willing seller and willing buyer willingly entering the property market to transact. Where contamination occurs, this concept is inapplicable as neither the land owner nor the oil company can deliberately decide to contaminate a piece of land, bearing in mind the economic consequences of such a decision. Though contamination may emanate from sabotage, the oil company who can successfully prove sabotage escapes liability for any compensation payment for any damages suffered. It is thus contended that the definition of value of a contaminated land should not include the concept of the imaginary 'willing seller and buyer'. The Niger Delta wetlands are a composite of man-made developments and natural goods and services that when contaminated, all need to be valued though valuation by its nature does possess some shortcomings. Valuation of man-made developments have been practiced by valuers who have been trained in normative economic models originating from the neo-classical school, but the valuation of environmental goods and services have been undertaken by ecologists who marry economic and welfare models in deriving their methodologies. Since wetlands consist of both the land where developments exist and the wetlands with some developments and environmental goods and services, a wetland valuer needs knowledge of wetland economics to be able to value it. The valuation of environmental goods and services are said by Vatn and Bromley (1994) to commoditise environmental goods and services and is subject to the problems of cognition (the difficulty in observing and weighting the attributes), incongruity (difficulty of measuring all the attributes with one single metric), and composition (the assumption that environmental goods and services can be distinctly compartmentalised into use and non-use values, neglecting functional values). These weaknesses notwithstanding, valuation offers a means of compressing information about the attributes of goods and services existing on contaminated wetlands, into a single measurable quantity that can aid the recipient in taking a decision about the impact of the contamination on the wetlands.

The consideration of the effect of the practice by the oil companies of the principle of corporate social responsibility (CSR) indicates that rather than pay the commensurate value of damages suffered due to wetland contamination in the Niger Delta, the oil companies see the payment as a means of discharging their corporate social responsibility rather than meeting their legal obligations. It is this belief that has led to their perceiving the discharge of their CSR as purchasing their operational licence.

There is generally a dearth of literature on the valuation of contaminated or polluted properties in the Niger Delta region in view of the dependence on methods prescribed for use in compulsory acquisition valuations. But the review of behavioural literature indicates that valuation problems can be solved with some behavioural knowledge, since each valuation problem has stakeholders whose interest should be equally considered in proffering a solution. The valuation of contaminated properties in Europe and America though developed, are not directly suitable for the Niger Delta wetlands context, in view of the cultural and developmental standard of the region.

In choosing a methodology, it was realised that the behavioural composition of valuation issues necessitates the adoption of a mixed-methodological approach which combined qualitative and quantitative approaches concurrently in the collection of empirical data for research. A behavioural study of valuers by a valuer is value laden. In keeping with the nature of valuation which seeks to apply an appropriate method of valuation that will yield the defined value being sought, the study adopts an abductive logic in its reasoning. Considering the entire Niger Delta region as a case study, the valuation firm is defined as the unit of analysis as valuers only practice valuation in the name of a firm of Valuers. In considering the sample for the study, the directory of registered valuers operating at the central city hosting the oil industry was reviewed and a sample of 120 firms drawn from the list of firms and questionnaires administered to them. Out of the total questionnaires administered, 65 questionnaires representing 54% were returned out of which 4 were found unusable. Some firms were also purposively selected for expert face-to-face interviews to hear the voice of practicing valuers on the valuation of contaminated wetlands. After an analysis of the literature, documentary evidence, questionnaire, and expert interviews, a conceptual framework for the determination of the compensable value of damages due to contamination of wetlands in the Niger Delta region of Nigeria was proposed. This proposed framework was sent to a sample constituting 15% of the combined total of respondents and the experts interviewed, to validate the framework in

terms of clarity of process and content, simplicity, ability to meet real life challenges, and the anticipated usefulness of the framework.

The analysis of the questionnaire and expert interview transcripts indicated that when valuing contaminated land in the Niger Delta region, most valuers define investment value as the value being sought and hence adopt valuation methods most suitable for determining investment values. Determining the damages due to contamination can hardly be said to be an investment. In the valuation for compulsory acquisition, valuers said they determine a special value rather than a statutory value which is dictated by a statute. Perhaps the seeking of a special value is due to the adoption of a valuation method prescribed by statute and termed the use of pre-determined compensation rates valuation. While the origin and the basis of determination of the rates is unknown, the government policy makers and the IOCs appear very satisfied with the resulting values from the application of this method of valuation, but the landowners appear very dissatisfied. The adoption of the OPTS pre-determined compensation rates for valuation by the IOCs confirms their close affinity to the Federal Government. The government who should be the regulator is also an equity holder in the IOCs through their Joint Venture Agreements and thus controls the practical operations of the IOCs and has to approve any compensation payment through the NNPC's Department of Petroleum Resources. A corollary of this joint-ownership of IOCs is the exclusion of the use of a free market determined valuation methods in the valuation of contaminated wetlands, as the government acts as both a regulator and the operator. This practice negates all professional explanations and does not meet the minimum international standard recommended by either the IVSC or the World Bank in OP. 4.12.

The low compensation resulting from the adoption of the present preferred valuation creates conflicts between acquiring authorities and land owners. The law presently determines the purpose, basis, and method of valuation, thereby discrediting the professional valuers' competence. Though this is the case for compulsory acquisition, even the valuation of contaminated land has borrowed the practice. The valuation process as applied, constitutes only the mathematical process of multiplying quantities of economic crops and trees by the prescribed compensation rates, assuming that valuation is an exact science of numerals only, but the essence of property is human behaviour and the economic activity necessitating valuation is human behaviour. This behaviour must be observed to be described and understood. Value formation is one of the critical issues

confronting the property discipline (Diaz, 1999). Wetland were said to be predominantly used for agricultural purposes and considered crucial for supporting the ecosystem. It was said to be essential for the health and wellbeing of the Niger Delta inhabitants. There appears to be no uniformity among valuers in the valuation of contaminated wetlands, as some valuers adopt the pre-determined compensation rates method, while others adopt the investment method with no clear indication of how they assemble comparable data required for the method. Though the Niger Delta terrain is littered with wetlands and a preponderance of rivers and streams, there is an avowed dearth of professional knowledge of the economics of wetlands, hence very few practicing valuers undertake valuation assignments aimed at determining the compensable value of contaminated wetlands. Those who accept, usually confirm the presence of contamination by observing tell-tale signs like discoloured/polluted water.

Valuers appear to anchor their practice on past assignments and conceal their data which could serve as comparables to others, thus creating a dearth of comparable data in the property market. The absence of a market for contaminated land and the absence of any law compelling registration of land transactions further aggravate the situation. Also, the government does not also have reliable statistics that could assist valuers obtain comparable data. Where market comparables do not exist, there can be no basis for adopting market reliant methods of valuation. This result in valuers adopting methods that rely on data generated from first principles as the best guide to the land owners perception of value. Such methods will include the contingent valuation methods used by ecosystem valuers or the normative depreciated replacement cost method of valuation.

8.2.3. Objective 3

To identify the stakeholders of valuation of contaminated wetlands and the rights they hold over such wetland;

The various stakeholders of contaminated wetlands in the Niger Delta are the land owners, the IOCs, the Federal Governments, and Professional Valuers. The land owners hold the proprietary right over the wetlands either as a customary or statutory right of occupancy depending on whether they were granted by Local Governments or State Governments. The professional valuers practice in the name of a firm of Estate Surveying and Valuation and variously describe themselves as Consultant Estate Surveyors and Valuers, Estate Surveyors and Valuers, Pupil Estate Surveyors, Properties/Facilities Managers, or Property

Developers. Though the professionals claim to be expert valuers, most of them appear ill-equipped professionally to determine the compensable values of damages due to contamination on wetlands due to the poor knowledge base and the absence of any professional standard and practice guide to assist them. This situation is exploited by the IOCs who dictate the basis and influence the valuation process, to their advantage. This means that while the IOCs and their Government backers are satisfied with the current compensation regime, the land owners and valuers are very dissatisfied with it. There is generally no transparency and professionalism in the process of determining the value of contaminated wetlands. There is also no defined protocol as well as the professional know-how to value wetlands in the Niger Delta region.

8.2.4. Objectives 4

To propose a framework for determining the compensable value of damages due to contamination of wetlands and Objective 5 was to validate the proposed framework for assessing the compensable value of damages due to contamination on wetlands in the Niger Delta.

The final step was to propose a framework to provide a transparent protocol for the determination of the compensable value of damages due to contamination of wetlands in the Niger Delta. It describes what should be done at each stage from the occurrence of a contaminating incident, through the investigative stage where the full impact of the incident and the resultant damages are quantitatively ascertained, to the valuation stage where value is determined. The suggested valuation process adopts the problem solving logic, commencing from the definition of the problem and value to abductively selecting a composite valuation method from property and wetland based methods. The curricular for training valuers need to be improved to train future valuers on wetland economics. As a first step, this study suggests a valuation model that is to be adopted in valuing wetlands, especially in the determination of the compensable value of damages due to contamination.

The usefulness of the proposed framework transcends the Niger Delta region of Nigeria. It is considered to be suitable for use in most economies where the title to land has been nationalised, any country experiencing contamination incidents or other forms of disaster that might necessitate the determination of compensable value for any damages suffered like industrial accidents resulting in damage to properties. For countries entering into the

oil industry for the first time, this framework will provide a benchmark with which to assess the meticulousness of valuers should any contamination occur.

8.3. Recommendations

The usability of the proposed framework will be dependent on the creation of the enabling environment for its successful implementation. To make this possible, the following recommendations are suggested:

- Government should restrict its role to being the regulator of the oil industry and review the compensation provisions of all enabling laws dictating methods of valuation to be adopted in compulsory acquisition valuations;
- The IOCs should allow Valuers in the Niger Delta exercise their professional skills as they do in the developed economies, rather than prescribing guidelines to be followed in the determination of compensable value of damages due to contamination;
- The NIESV and ESVARBON should produce a Practice Standard for the Valuation of Contaminated Properties, incorporating international best practice standards;
- Government departments should allow access to their data about various aspects of the economy, and valuation firms should create a Property Data Bank that will freely share market data on property transactions to aid comparability;
- The critical role of valuers in value determination requires the training curricular of future valuers to be expanded to include aspects of ecological economics to address the peculiarities of the Niger Delta environment; and
- In negotiating for compensation payments for damages suffered, landowners should seek professional valuation advice from experienced valuers.

8.4. Some Implications of the Study

These research findings have some implications for policy, practice and further research.

i. The policy implications for developing economies like that of Nigeria is that where the Government compromises its regulatory role and becomes dependent on only one sector of the economy for its revenues, the citizens will suffer as they are unable to insist on the application of free market international best practices in the

operations of the dominant industry. The oil spillage in the Gulf of Mexico was quickly cleaned and the polluter made to pay adequate market determined compensation for damages, whereas oil spills in the Niger Delta are hardly paid for and where they are paid, it will be a regulated compensation.

ii. The framework will enable the operators of the oil industry follow a laid down protocol in responding to oil spill contamination as they will be able to visualise the various processes involved. It will also result in the adoption of a market determined valuation methods that will yield better values to the landowners. Finally, it will add to the tools available for valuing the environment for decision making.

iii. Practically, the framework affords the operators of the oil industry a transparent procedure that enables each party to know what the responsibility of the other parties are. Professional valuers who adopt the framework will be able to methodically solve a valuation problem with clarity and certainty and avoid the accusation of compromising with the polluters, when consulted for their opinions. There will be uniformity among valuers handling such valuation assignments as they will all follow a common procedure and the aggrieved land owners will be able to understand the various processes involved in the determination of compensable value of damages due to contamination of wetlands. The regulatory body of Valuers will also have a standard with which to assess the compliance of valuers to stated procedures of practice and thus improve the regulation of practice.

iv. The research implications of the study are that valuers will need to update their knowledge of wetland economics to be able to adopt the framework. Training institutions will need to update their valuation curricular to include ecological economics if future valuers are to be adequately equipped to value wetlands. This also implies that academics in these institutions will need to develop their professional capacity to train future valuers.

8.5. Contributions of the Study

i. The descriptive analyses used for this study have shown the dependence of valuers on valuation methods prescribed by law for the valuation for compulsory acquisition purposes in the determination of value of contaminated land. While valuers have practiced valuation in the Niger Delta, they have done so without any laid down process and have also not taken cognisance of the need for scientific

studies in determining the impact of a contaminating incident before proceeding to determine value. The development of the framework for determining the compensable value of damages due to contamination of wetlands is the main contribution of this study.

ii. The study provides a clue to the practice of valuers by revealing their anchoring behaviour in the selection of methods and comparables to be applied in the selected methods.

iii. Since the value of the damages is dependent on the impact of the contamination of the wetland, the study enables the user of the framework to see the sequence of events leading to value determination.

iv. As compensation is a major cause of the conflict between the oil industry operators and the Niger Delta communities, the study provides a contribution to the discussions of compensation, corporate social responsibility and conflict mitigation in the region.

v. Valuation as a behavioural study is context dependent as the factors influencing values differ between different contexts. This study highlights the peculiarities of, and provides a contribution to the development of valuation literature in the Niger Delta.

vi. By providing a valuation protocol to be followed in determining the compensable value of damages due to contamination, the study provides a foundation for the development of professional standards by the Estate Surveyors and Valuers Registration Board of Nigeria, who regulates the practice of valuers in the Niger Delta.

vii. Finally, the framework provides logical steps to be followed in determining the compensable value of damages due to contamination on wetlands in the Niger Delta.

8.6. Potentials for future research and development of the Framework

- This study was a cross-sectional study that only examined the practice of valuers. To assess the general acceptability of the proposed framework, it may be necessary to further present it to both the oil industry operators who are the major polluters and the land owners to reflect their views.

- It might be appropriate to test the framework in an action research where it is used to assess a new oil spill incident and observe the resultant value when it is followed

methodically from the beginning to the end. It may also be necessary to apply the framework to a different context beyond the Niger Delta of Nigeria to verify its applicability to value determination in general.

- On a general note, the framework may be applied to any valuation assignment where specialist inputs are required before the determination of values, to test its ability to solve the valuation problem.

- While the data used for the study was obtained from a section of valuers, most of the statistics have been accepted on their face value. The questionnaire and interview transcripts were analysed descriptively only, to enhance findings from such studies, the questionnaire may need to be improved to allow for correlational analysis, and the sample size enlarged to include more valuers and respondents.

- Rather than a concurrent mixed-methods research, a sequential mixed-method study may be undertaken to fine-tune the questions for the interviews.

8.7. Limitations

- The study has been conducted with data from the Niger Delta only and the expert respondents purposively selected. This approach will decrease the generalizability of the findings.

- The interpretations of both the quantitative and qualitative surveys, could be subject to other interpretations besides those given here;

- As a baseline study, the research lacks external validity and it may not be adequate to base policy implications on the findings of just one study.

Appendices

Appendix A Historical Development of Value

END OF MIDDLE AGES BEGINNING OF THE REFORMATION AND RESTORATION PERIOD	Fundamental changes, a move from feudalism to mercantilism.	John Hales 'A Discourse of the Common Wealth of this Realm of England (1549) developed some notion in value concepts with some reference to scarcity During this time a debate arose between free traders and protectionist represented by Gerard de Malynes and Edward Misselden.

Thomas Num, regarded the ability to trade equated to ability to create wealth.

Sir William Petty. First to develop a theory of value. It was based on the hypothesis of value of labour merged with a surplus theory of rent. Also known for his emphasis on statistical measurement. Foreshadowed the classical school of economics with notions of exchange value based on production cost.

Nicholas Barbon (1690) postulated that utility was more important than labour. Barbon was ahead of his time referring to value as 'the price of the merchant' 'The market is the best judge of value' 'Things are worth so much as they can be sold for' |
| | Enlightenment Economists | John Locke (1691 – 1726) Original comparison between the value of water and the value of diamonds.

Richard Cantillon (1730) a founder of the classical school, where he provided a structural concept of General Equilibrium theory from which he conceptualised 'Land Theory of Value' with description of an economy being interacting markets linked by a price system. Cantillon believed that market value could differ from the cost of production value,

Charles King argued the importance of cost in determining value.

Francois Quesnay credited with 'laissez faire, laissez passer' known as the founder of the Physiocrats. This school of economic thought was formed as a counter to the Mercantilists and as their central philosophy adopted the concept of *natural laws*. Other followers were; Mirabeau the elder, Pierre Samuel du Pont de Nemours, Ferdinondo Galiani and Robert Jacques Turgot. This school regarded land as the bases of wealth and the source of taxation, and the relationship of trade to prosperity. This group identified that land had a utility value that real wealth was derived from the usefulness or productivity of land. This included the role of rent and the natural resources of society.

Sir James Stuart forerunner of the classical school. His economic treatise *An Inquiry into the Principles of* |

			Political Economy was published in 1767, nine years ahead of Adam Smith's *The Wealth of Nations.*
1776		Classical School of Economic Though	As the much cited economist, Adam Smith's concept of natural value contained in Wealth of Nations, based on the cost of labour which was the foundation of his theory of value. Smith also introduced the notion of 'the actual value at which any commodity is commonly sold is called its market price. It may either be above or below, or exactly the same with its nature value.' (Adam Smith, 1776) Thomas Robert Malthus introduced the concept of *scarcity.* David Ricardo; also much cited. Published work '*On the Principles of Economy and Taxation' 1817,* was highly influential and contained and contributed much to the Theory of Value. His central theme although not contrary to Adam Smith but he rejected the total fixed contribution of labour to value and adopted the notion that the labour contribution could vary. The influence of the three leaders, Adam Smith, Malthus and Ricardo lasted well into the 20th Century. John Stuart Mill *'Principles of Political Economy'* concept of 'exchange value'. Initial marginal Theory of Value concept was from F Galian.
1847			Emergence of the Austrian School lead by Carl Menger. A large part of the debate can be attributed to by Jevons, Who proposed that value come not from production cost but marginal utility to consumers. At this point in the evolution of the Theory of Value there were now established three leading concepts of the theory of value these were value in use, cost value and exchange value.
1871		Emergence of the Marginalists and its evolution into the Neoclassical School 1842-1924 1867-1945 1852 – 1949 1866 – 1945	The evolution from the marginalist to neoclassical school was led by Alfred Marshall. Marshall's attempt to reconcile Marginalists theory with the classical school provided the foundation of the abstract thinking and formation of the Neoclassical School of Economic Thought. Marshall integrated the marginalist concept into a theory of supply and demand where price was equal to value. Irving Fisher.1892 provided a mathematical Investigation into the Theory of Value and Prices John Maynard Keynes, 1936 considered founder of modern macroeconomics, advocated interventionist government policy and the use of fiscal and monetary measures to mitigate the adverse effects of market behaviour. John Hobson, 1898 developed land rent theory, marginal theory and theory of distribution. Richard T. Ely 1917 known as an economic institutionalist wrote extensively on the financial relationship of real estate and the economy.

	1871	Phillip Wicksteed 1894 "An Essay on the Co-ordination of the Laws of Distribution", in 1913 presented "The Scope and Method of Political Economy in the light of the 'Marginal' Theory of Value and Distribution".
		Karl Gustav Cassel Theory of Social Economy, 1918 "Prices are paid for the factors of production in accordance with the general principle of scarcity, because it is necessary to restrict demand for them in such ways that it can be met with the available supplies. The costs of production of a commodity are, from this standpoint, simply an expression of the scarcity of those factors of production required to make it." 1903 Cassel advocates price theory
		Lord Robbins, 1980 defined economics as "the science which studies human behaviour as a relationship between ends and scarce means which have alternative uses"
		John Hicks 1939 developed consumer demand theory or demand function.
		Frank H Knight a leader in the Chicago School of Economic Thought that promoted neoclassical price theory in particular "risk and uncertainty " 1931
		Robert Lucas 1980 – 1995 argued that a macroeconomic

Appendix D: Semi-Structured Questionnaire

Title of Project: Assessing damages due to contamination to land with natural resources in the Niger Delta of Nigeria.

Nam of Researcher: Victor A. Akujuru

Name of Supervisor: Prof. Les Ruddock

Aim: The aim of this research is to evaluate the methods used by valuation experts in assessing damage on contaminated land which occurs when oil pollution occurs and to propose a framework for such valuations that will accommodate the needs and aspirations of the interest holders and minimise the conflicts that usually attend the payment of compensation for such damages.

The questionnaire is targeted at practising valuers who have been involved in assessing damages due to oil pollution as well as those who mediate between land interest holders and polluters and advisers to oil multinational companies.

Confidentiality: All information provided will be treated in strict confidence and your identity and anonymity is guaranteed. Results will only be published in aggregate form and used strictly for the purpose of this research only. Any acknowledgement of you or your organisation will be made subject to your agreement.

Instructions:

In the attached questionnaire, you are asked to answer the questions by ticking the appropriate boxes.

Where you are given a scaled choice, you need only to tick one box per question.

Section A1-General Information

> **Name of Firm/Organization:**
>
> **Location:**
>
> **Branch Offices:**
>
> **Year of Incorporation:**
>
> **Year of Registration of Principal:**
>
> **Areas of Specialization:**
>
> **Number of Registered Estate Surveyors and Valuers in the Firm:**
>
> **Number of Other Professionals in the Firm:**

Section A2- General Information

For each of questions1-3, please tick one box only

Q1. How would you classify your role in the firm?

A) Consultant Estate Surveyor and Valuer   [ ]   B) Property Developer [ ]

B) Estate Surveyor and Valuer   [ ]   D) Project Manager [ ]

E) Pupil Estate Surveyor   [ ]   F)   Office Administrator   [ ]

G) Properties/Facilities Manager   [ ]   H) Research Surveyor   [ ]

I) Agency Surveyor   [ ]   .J) Other (Please Specify)   [ ]

Q2. How many years experience do you have as a Professional Valuer and in the Employment of   the Firm?

	Professional Valuer					Firm's Employment				
Years	1	2	3	4	5	1	2	3	4	5
0-5										
6-10										
11-15										
16-20										
20+										

Q3.Tick which of these classifications is applicable to your firm.

A) Estate Surveyors and Valuers   [   ]   B) Property Managers
        [   ]

C) Property Developers   [   ]   D) Environmental Valuation Surveyors   [   ]

E) Feasibility Study Experts   [   ]   F) Other (Specify

Q4. What types of Valuation does the Firm undertake? (Please tick as many as applicable)

A) Valuation of Land and Buildings   [   ]   B) Valuation for Insurance
    Purposes   [   ]

B) Valuation for Rating Purposes   [   ]   D)   Valuation   for
    Compulsory Purchase   [   ]

C) Valuation for Damages and Injurious Affection   [   ]

Q5.Kindly rate the frequency of assessment of damages due to contamination undertaken by your Firm in the last 10 years, on the scale provided.

Frequency of Assessment	1 Never	2 Rarely	3 Sometimes	4 Often	5 Always
Damage Assessment					

Section B-The Valuation of Agricultural Land: The aim of this section is to evaluate the methods of valuation used in valuing agricultural land and the factors affecting the choice of method.

Q6. Please tick on the table below, which type of Value that you determine when an agricultural land is compulsorily acquired or contaminated?

Purpose of Valuation	Fair Value	Market Value	Statutory Value	Forced Sale Value	Impaired Value	Investment Value	Special Value
Compulsory Acquisition							
Contamination Damage Assessment							

Q7. Rate the frequency of the method of Valuation your Firm uses when acting for

an agricultural land owner whose land is compulsorily acquired.

Method of Valuation	1 Never	2 Almost Never	3 Occasionally	4 Almost Every Time	5 Every Time
Comparable Sale Method					
Depreciated Replacement Cost Method					
Use of Pre-determined Compensation Rates					
Income Capitalisation Method					
Subdivision Development Valuation Method					
Land Value Extraction Method					
Discounted Cash Flow Technique					
Contingent Valuation Method					
Hedonic Pricing Model					

Q8.On the Scale provided, indicate how the Valuation Method prescribed by the Law for

Compulsory Acquisition influences the choice of Valuation method for agricultural land.

Influence on Value	1 Not at all Influential	2 Slightly Influential	3 Somewhat Influential	4 Very Influential	5 Extremely Influential
Valuation method prescribed by Law					

Q9. Kindly indicate on the Scale provided, which method of valuation you use in the Valuation to assess damages on Contaminated agricultural land on the basis of frequency of use.

Valuation Method	1 Never	2 Rarely	3 Sometimes	4 Often	5 Always
Comparable Sale Method					
Depreciated Replacement Cost Method					
Use of Pre-determined Compensation Rates					
Income Capitalisation Method					
Subdivision Development Valuation Method					
Land Value Extraction Method					
Discounted Cash Flow Technique					
Contingent Valuation Method					
Hedonic Pricing Model					

Section C- *The Valuation of Wetlands: The aim of this section is to evaluate the practice of valuing Wetlands and the attendant methods being used.*

Q10. How important do you think wetland goods and services are in the determination of wetland values? *Please rate by ticking the appropriate box representing your opinion.*

Wetlands Goods/Services	1 Not at all Important	2 Slightly Important	3 Neutral	4 Moderately Important	5 Extremely Important
Fish and Fish Nursery					
Non Timber Forest Products					
Agriculture					
Timber					
Fuel Wood					

Wild Life					
Transport					
Recreation					
Nutrient Retention					
Flood Control					
Storm Protection					
Shoreline stabilization					
Ground water recharge/ Water Supply					
External ecosystem support					
Biodiversity					
Culture/ Heritage					
Bequest					

Q11. Kindly indicate on the Scale provided, which method of valuation you use in the Valuation of wetlands on the basis of frequency of use.

Wetlands Valuation Methods	1 Never	2 Rarely	3 Sometimes	4 Often	5 Always
Comparable Sale Method/ Market Prices					
Depreciated Replacement Cost Method					
Use of Pre-determined Compensation Rates					
Income Capitalisation Method					
Subdivision Development Valuation Method					
Land Value Extraction Method					
Discounted Cash Flow Technique					
Contingent Valuation Method					
Travel Cost Techniques					
Hedonic Pricing					
Mitigative/ Avertive Expenditure					
Damage Cost avoided					

Section D- Damage assessment: The aim of this section is to ascertain the method of valuation used in the assessment of damages due to contamination on both agricultural land and wetlands generally.

Q12. Indicate on the scale, how many Valuations for Damage Assessment due to contamination has the Firm undertaken in the last10 years?

Years	1	2	3	4	5
0-5					
6-10					
11-15					
16-20					
20+					

Q13. How do you rate the importance of the indicators of environmental degradation on the scale provided? *Please rate by ticking the appropriate box representing your opinion, using 5.Extremely Important,   4.Moderately Important, 3. Neutral 2. Slightly Important, 1. Not Very Important*

Indicators of Contamination	1 Not Very Important	2 Slightly Important	3 Neutral	4 Moderately Important	5 Extremely Important
Damaged Landscaping					
Sickly or Dead Vegetation					
Discoloured or disturbed soil					
Discoloured or Polluted water					
Depressed areas or pits					
Noxious or unusual odours					
Soil boring holes					
Coloured drainage ditches					
Depressed areas or pits					
Discharge/ seepage of water or fluids					

Q14. Does the valuation method used in the damage assessment determination differ from the method selected in Q 11 above? *Please tick the box applicable*

Different   [ ]   Not Different   [ ]

Q15. In choosing a valuation method, rate the factors influencing the choice on the scale provided in the order of importance. ? *Please rate by ticking the appropriate box representing your opinion.*

Factors Influencing Choice of Valuation Method	1 Not at all Influential	2 Slightly Influential	3 Undecided	4 Very Influential	5 Extremely Influential
Method usually used by Firm					
Following other Valuers' Practice					
Method suitable to subject assignment					

Q16. Indicate the importance of the factors that determine the choice of comparables *Please rate by ticking the appropriate box representing your opinion,*

Factors Influencing Choice of Comparables	1 Not Very Important	2 Slightly Important	3 Neutral	4 Moderately Important	5 Extremely Important
Availability in Firm's database					
To justify choice of Valuation Method					
Availability in similar location for similar properties					
Look for properties with same level of Contamination					
To ensure consistency in Firm's practice					

Q17. Is there any official source of information kept by Government, to ascertain the levels of productivity of the following? *Please tick the appropriate box.*

Type of Information	Available	Not Available
Farming		
Fishing		
Land Values		
Soil		
Crops		

Q18. In determining income levels from lost productivity following a contamination, state the frequency of use of the following sources.

Sources of Information	1 Never	2 Rarely	3 Sometimes	4 Often	5 Always
Government Official records					
Firm's database					
Other Firms' records					
Survey of affected neighbourhood					

Q19. If you have been using the Comparable Sales method to assess damages due to contamination, indicate how many comparables you typically rely on to support your valuation by ticking the appropriate box below.

No of Comparables	
1-5	
5-10	
10-15	
15-20	
Other (Please State)	

Q20. Which of these Stakeholders do you think have the MOST influence on the choice of Valuation method, in the process of assessing damages due to contamination? *Please rank by ticking the appropriate box representing your opinion using the scale provided*

Stakeholders	1 Least Influential	2 Slightly Influential	3 Somewhat Influential	4 Very Influential	5 Extremely Influential
Oil/Gas Companies					
Property Right Holder					
Federal Government					
Professional Valuer					

Q21. How satisfied are the respective stakeholders with the damage assessed on the basis of the current valuation methods? *Please rate by ticking the appropriate box representing your view.*

Stakeholders	1 Very Dissatisfied	2 Not Satisfied,	3 Undecided	4 Satisfied,	5 Very Satisfied,
Oil/Gas Companies					
Property Rights Holders					
Federal Government					
Professional Valuers					

Q22. Indicate if you agree that there is need for a Practice Standard, specifying the Valuation Method(s) that should be adopted for valuing contaminated Wetlands *by ticking the appropriate box representing your views.*

Availability of Practice Standard	1 Strongly Disagree	2 Disagree	3 Neutral	4 Agree	5 Strongly Agree
No Practice Standard Exists					
There is need for a Practice Standard					
No Practice Standard is needed					

Q23. Indicate if you agree that there is the need for a method of valuation that combines the different methods of agricultural land and wetland valuation. *Please rate by ticking the appropriate box representing your view.*

Need for a Composite Method of Valuation	1 Strongly Disagree.	2 Disagree	3 Neutral	4 Agree	5 Strongly Agree
Current Valuation Methods are sufficient					
Taught Valuation Methods are NOT comprehensive					
There is Need for a Composite Method					

Thank you for your co-operation.

APPENDIX C: SEMI-STRUCTURED EXPERT INTERVIEW GUIDE

A. **Contamination and Degradation:**

The aim of this section is to understand what practicing valuers consider as contamination/degradation of land and natural resources.

1. In your opinion, what types of interests exist in land in the Niger Delta?

2. How do you confirm if a parcel of land is contaminated or degraded and what are the tell-tale signs?

3. How do you ascertain that the interest in land is affected by any contamination?

4. What level of contamination results in damage of land resources, for which a valuation is required.

5. How do you distinguish the valuation for compensation for compulsory purchase/acquisition and valuation for damages due to contamination/degradation?

B. **Stakeholders Interest:**

Here we want to understand the various stakeholders in land in the Niger Delta and the type of interest they hold in land.

1. Who do you consider the major stakeholders in the land market in the Niger Delta?

2. How do these stakeholders participate in the process of oil/gas exploitation in the region?

3. Which of the stakeholders usually initiates a valuation for damage assessment, when an oil spillage occurs?

4. How do the stakeholders influence the value opinion in the damage assessment process?

5. Is the payment of damages for contamination seen as a right of the land owners or as a privilege given by the oil/gas companies?

C. **Valuation Methods :**

The aim of this section is to distinguish the valuation of land from that of a wetland. A wetland is a parcel of land that is saturated by surface or groundwater at a frequency and duration sufficient to support vegetation and animal life that is typically adapted for life in saturated soil conditions.

1. What method/s of valuation do you normally use to value land when it is to be compulsorily acquired?

2. What method/s of valuation do you adopt in valuing any land that has been contaminated by oil pollution?

3. How do you value a wetland when it is required to know the value of such wetland?

4. How do you value a polluted wetland?

5. How do you value land with natural resources like timber, non-timber forest products, fisheries habitat and wild life?

6. Do you consider the method/s of valuation used for urban land applicable to wetlands?

D. **Institutional Guidelines:**

The valuation profession being regulated by Institutional Guidelines calls for the verification of the presence of any standard and the acceptability of any proposed framework for valuation assignments.

1. What Institutional Guidelines (if any) are available for valuers assessing damages due to contamination by oil pollution in Nigeria?

2. In your opinion, should the compensation for damages due to contamination be related to the compensation for compulsory acquisition?

3. Are you aware of any International Guidelines for the valuation of contaminated properties that is applicable to Nigeria?

4. In your opinion, is there a need for an acceptable valuation framework that can capture the characteristics of wetlands and land with natural resources?

Any other comments/contribution you consider necessary will be welcome.

APPENDIX C2: DEMOGRAPHY OF RESPONDENTS:

Type of Firm

Feasibility Studies Experts	47.5%
Property Developers	1.6%
Estate Surveyor and Valuer	1.6%
Consultant Estate Surveyor and Valuer	49.2%

Years of Employment

0-5	37.7%
6-10	11.5%
11-15	3.3%
16-20	9.8%
Above 20	37.7%

Years of Experience as Professionals

0-5	13.1%
6-10	24.6%
11-15	18.0%
16-20	1.6%
Above 20	42.6%

Respondents' Role in the Firm

Estate Surveyor and Valuer	1.6%
Property/Facility Manager	27.9%
Consultant Estate Surveyor and Valuer	70.5%

Respondents' Experience in Damage Assessments

0-5	35%
6-10	21%
11-15	18%
16-20	8%
Above 20	18%

ACADEMIC AUDIT AND GOVERNANCE COMMITTEE

COLLEGE OF SCIENCE AND TECHNOLOGY RESEARCH ETHICS PANEL   (CST)

TO: VICTOR AKUJURU AND PROF LES RUDDOCK
CC: PROF MIKE KAGIOGLOU, HEAD OF SCHOOL OF SOBE
MEMORANDUM
From: Nathalie Audren Howarth, College Research Support Officer

Date   2nd April 2013

Subject: Approval of your Project by CST

Project Title: ASSESSING DAMAGES DUE TO CONTAMINATION TO LAND

WITH NATURAL RESOURCES IN THE NIGER DELTA OF NIGERIA

REP Reference: CST 12/49

Following your responses to the Panel's queries, based on the information you provided, I can confirm that they have no objections on ethical grounds to your project.

If there are any changes to the project and/or its methodology, please inform the Panel as soon as possible.

Regards,

Nathalie Audren Howarth

College Research Support Officer

Title of Project: Assessing Damages due to Contamination to Land with Natural Resources in the Niger Delta of Nigeria.

RGEC Ref No:

Name of Researcher: VICTOR A AKUJURU

Tick as appropriate (√)

S/N		YES	NO
1	I confirm that I have read and understood the information sheet or the above study and what my contribution would be		
2	I have been given the opportunity to ask questions about the project		
3	I agree to take part in the interview		
4	I agree to the interview being Tape-recorded.		
5	I agree to digital images being taken during the research exercises. Anonymity of the participants will be guaranteed		
6	I understand that my participation is voluntary and that I can withdraw from the research at any time without giving any reason for withdrawing		
7	I agree that the information provided by me can be used in the above study.		

Name of Respondent:…………………………………………

Position…………………………………………………

Date………………………………………………………………….

APPENDIX F: OPTS COMPENSATION RATES

Property	Rate/ Hectare	1994			Rate/ Hectare	1997			Rate/ Hectare	2001		
		Mature	Medium	Seedlings		Mature	Medium	Seedlings		Mature	Medium	Seedlings
A:Food Crops												
Native Beans	5,330	1.30/stand	0.65/stand	0.33/crop	10,660	2.60/stand	1.30/stand	0.66/crop	-	22,500	11,250	6,000
Bitter leaf	-	6.50/stand	3.90/stem	2.60/stem	-	13.00/stand	6.50/stem	3.25/stem	-	14,700	7,500	3,750
Cassava	8,840	10.00/plant	5.00/plant	2.50/plant	17,680	20.00/plant	10.00/plant	5.00/plant	-	38,000	18,000	9,000
Garden Egg	195	6.50/crop	3.25/crop	1.63/crop	-	13.00/crop	6.50/crop	3.25/crop	-	12,000	6,000	3,000
Gourd	-	7.80/crop	3.90/crop	1.95/crop	-	15.60/crop	7.80/crop	3.90/crop	-	18,000	9,000	4,500
Groundnut	3,250	1.20/crop	0.60/stand	0.30/crop	6,500	2.40/crop	1.20/stand	0.60/crop	-	20,000	10,000	5,000
Lemon Grass	-	3.90/crop	1.95/crop	0.98/crop	-	7.80/crop	3.90/crop	1.95/crop	-	0.32/stand	0.16/stand	0.08/stand
Maize	3,900	3,900/hec.	1,950/hec.	975.00/hec	7,800	7,800/hec	3,900/hec.	1,950/hec	-	24,000	12,000	6,000
Melon	5,850	3.90/crop	1.95/crop	0.98/crop	11,700	7.80/crop	3.90/crop	1.95/crop	-	31,000	16,000	8,000
Okra	-	2.60/stem	1.30/stem	0.65/stem	-	5.20/stem	2.60/stem	1.30/stem	-	15,000	8,000	4,000
Alligator Pepper	-	3.90/stem	1.95/stem	0.98/crop	-	7.80/stem	3.90/stem	1.95/stem	-	1.20/stand	0.60/stand	0.30/stand
Hot Pepper	4,940	3.90/stem	1.95/stem	0.65/plant	9,880	7.80/stem	3.90/stem	1.95/plant	-	23,000	12,000	6,000
Pineapple	-	10.00/crop	5.00/crop	2.50/crop	-	20.00/crop	10.00/crop	5.00/crop	-	150/crop	75/crop	40/crop
Plantain	-	160.00/plant	80.00/plant	40.00/plant	-	320/plant	160/plant	80/plant	-	750/plant	375/plant	180/plant
Sweet Potato	3,250	1.30/plant	0.65/stand	0.33/stand	6,500	2.60/plant	1.30/plant	0.65/plant	-	31,000	15,500	7,750
Sugarcane	11,570	0.91/plant	0.46/plant	0.26/plant	23,140	1.82/plant	0.92/plant	0.52/plant	-	44,000	22,000	11,000
Tomato	6,500	6.50/stand	2.60/stand	1.30/stand	13,000	13.00/stand	6.50/stand	3.25/stand	-	28,000	14,000	7,000
Yam (regular)	-	20.00/stand	10.00/stand	5.00/stand	4,800	40.00/stand	20.00/stand	10.00/stand	-	65,000	32,000	16,000
Water Yam	-	-	-	-	-	-	-	-	-	35,000	17,500	8,750

B:Income-producing Trees	Mature	1994 Medium	Seedlings	Mature	1997 Medium	Seedlings	Mature	2001 Medium	Seedlings
Avocado	180	90	45	360	180	90	2,400	1,200	600
Banana	160	80	40	320	160	80	500	250	125
Breadfruit	80	40	20	160	80	40	1,900	950	475
Calabash Tree 10	10	5	3.5	20	10	5	1,440	720	360
Cashew	120	60	30	240	120	60	2,200	1,100	550
Cocoa	500	200	100	1,000	500	250	2,500	1,500	750
Coconut Palm	300	150	75	600	300	150	5,450	2,750	1,360
Timber and Mangrove Timber (Iroko,Abura,etc)	600	300	150	1,200	600	300	34,000	17,000	8,500
1,500Mangrove (per hectare)	1,500	750	375	3,000	1,500	750	-	-	-

C:Land Acquisition and Loss	1994	1997	2001
Acquisition or permanent Land Loss (urban Land)	1.50/sq. metre	3.00/sq. metre	3.00/sq. metre
Acquisition or permanent Loss (rural land)	1.00/sq. metre	2.00/sq. metre	2.00/sq. metre
Permanent Loss of Fishing Rights	2.50/sq. metre	3.00/sq. metre	3.00/sq. metre
Fishing Ground/Tidal Basin	6.00/sq. metre	6.00/sq. metre	6.00/sq. metre
Rivers/Creeks	6.00/sq. metre	6.00/sq. metre	6.00/sq. metre
Fish Trap/Animal Trap (depending on Size)	10.00-50.00/sq. metre	200.00-400.00/sq. metre	200.00-400.00/sq. metre
Fish Fence/Animal Fence (depending on size)	32.00/metre-run	50.00/metre-run	50.00/metre-run
Timber Canal/Fish Channel	32.00/sq. metre	50.00/sq. metre	50.00/sq. metre
Agricultural lands (specific items like Crops, trees, and other items Destroyed should be assessed based on The above rates)	800.00/hec.	800.00/hec.	100,000.00/hec.
Inhabited Area	400.00/hec.	800.00/hec.	100,000.00/hec.
Other Lands	400.00/hec.	400.00/hec.	Compensation to be negotiated between polluter and claimants.
Recreation/Aesthetic Area	400.00/hec.	-	do
Loss of earnings from fishing as a result of siltation	1.00/sq. metre	1.00/sq. metre	do
Cut Traces	1.00sq. metre	5.00/sq. metre	do

Compensation rates are in Naira

Source: OPTS, Lagos (2001)

APPENDIX G: SPECIFIC INDUSTRIES AND LAND USES ASSOCIATED WITH SITE CONTAMINATION

1. Abattoirs and Animal Processing Works
2. Acid/alkali plant and formulation
3. Agricultural Activities (Vineyards, Tobacco , Sheep Dips, market Gardens)
4. Airports
5. Alumina Refinery Residue Disposal Areas
6. Asbestos production, and disposal
7. By-Product Animal Rendering
8. Bottling Works
9. Breweries
10. Brickworks
11. Car Wreckers
12. Cement Works
13. Cemeteries
14. Ceramic Works
15. Chemicals manufacture and formulation
16. Coal Mines and Preparation Plants
17. Defence Works
18. Docks
19. Drum Reconditioning Works
20. Dry Cleaning Establishments
21. Electricity Distribution
22. Electroplating and Heat Treatment Premises
23. Ethanol Production Plants
24. Engine works
25. Explosives industries
26. Fertiliser Manufacturing Plants
27. Gas works
28. Glass Manufacturing Works
29. Horticulture/Orchards
30. Industrial Tailings Ponds
31. Iron and Steel Works
32. Landfill Sites
33. Lime Works
34. Marinas and Associated Boat Yards
35. Metal treatment
36. Mineral Sand Dumps
37. Mining and Extractive Industries
38. Munitions Testing and Production Sites
39. Oil Production, Treatment and Storage
40. Paint Formulation and Manufacture
41. Pesticide Manufacture and Formulation
42. Pharmaceutical Manufacture and Formulation
43. Photographic Developers
44. Piggeries
45. Plant Nurseries
46. Plastic or Fibreglass
47. Power Stations
48. Prescribed Waste Treatment and Storage Facilities
49. Printed Circuit Board Manufacturers
50. Properties Containing Underground Storage Tanks
51. Radioactive Materials, Use or Disposal
52. Railway Yards
53. Research Laboratories
54. Sawmills and Joinery Works
55. Scrap Yards
56. Service Stations
57. Sewerage Works
58. Smelting and Refining
59. Sugarmill or Refinery
60. Tanning and Associated Trades (eg Fellmongery)
61. Timber Treatment Works
62. Transport/Storage Depots
63. Tyre Manufacturing and Retreading Works
64. Waste Treatment Plants in which Solid, Liquid Chemical, Oil, Petroleum or Hospital Wastes are Incinerated, Crushed, Stored, Processed, Recovered or Disposed of.
65. Wood Storage Treatment
66. Wood Treatment Facility
67. Wood Preservation

Source: Australian Institute of Valuers and Land Economists, 1994.

APPENDIX H: REVIEWED DOCUMENTS

1. Land Use Act, Cap L5, (LFN,2004).

2. Nigerian Minerals and Mining Act, 2007.

3. Oil Pipelines Act, Cap 07, (LFN, 2004).

4. Petroleum Act, Cap P10, (LFN, 2004).

5. Minerals and Mining Act, Cap M12, (LFN, 2004).

6. The Shell Petroleum Development Company Limited vs Councillor F. B. Farah and Others, CA/PH/9/92, NWLR 3, pp. 148- 202.

7. Chief T. Okeowo vs Attorney General of Ogun State, SC. 322/2001, NWLR 16, pp. 327-346.

8. Nigerian National Petroleum Corporation Act, Cap. M23, (LFN, 2004).

9. National Oil Spill Detection and Response Agency (Establishment) Act, 2006.

10. International Convention on Civil Liability for Oil Pollution Damage, (Ratification and Enforcement) Act, 2006.

11. International Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage, 1971, as amended (Ratification and Enforcement) Act, 2006.

12. Shell Petroleum Development Company Nigeria Limited vs Chief T. Edamkwe and Others, SC. 60/2003, NWLR 14, pp. 1-42.

13. Valuation Standards and Guidance Notes, (2006), Nigerian Institution of Estate Surveyors and Valuers, Lagos.

14. Uniform Standards of Professional Appraisal Practice (USPAP, 2005), Appraisal Standards Board, 2005 Edition.

15. Canadian Uniform Standards of Professional Appraisal Practice (CUSPAP, 2010).

APPENDIX I: LIST OF REFREED PAPERS

1. The Determination of Compensation Payable in the Niger Delta for Compulsory Acquisition and the Need for a Sustainable Practice, Published in the Journal of Sustainable Development in Africa, Volume 16, Iss. 2, 2014. ISSN: 1520-5509.

2. Incorporation of Socio-Cultural Values in Damage Assessment Valuations of Contaminated Lands in the Niger Delta, Published in Land Journal, 2014, Volume3, Iss. 3, pp. 675-692, doi/10. 3390/land303675.

3. Dichotomising Compulsory Land Acquisition and Land Contamination Valuations, accepted for and awaiting publication in International Journal of Disaster Resilience in the Built Environment.

References

Merriam- Webster. *Encyclopaedia Britannica.*

2004. Land Use Act. *LFN.* Nigeria: FGN.

2007. Nigerian Minerals and Mining Act. Nigeria.

ABILA, S., ELIJAH 2009. Historical and Philosophical foundations of minority rights movements in Niger Delta. *In:* EMIRI, F. A. D., G. (ed.) *Law and Petroleum Industry in Nigeria, current Challenges.* Lagos: Malthouse Law Books.

AFINOTAN, L. A. & OJAKOROTU, V. 2009. The Niger Delta Crisis: Issues, Challenges and Prospects. *In:* OJAKOROTU, V. (ed.) *Conflict and Development Series.* Bangkok: JAPSS Press Inc.

AKANKANDELWA, N. 2012. Real Estate Valuation- From Philosophy to Methods. *AfRES Annual Conference.* Accra, Ghana.

AKPAN, W. 2005. Putting Oil First? Some Ethnographic Aspects of Petroleum-related Land Use Controversies in Nigeria. *African Sociological Review,* 9.

AKPAN, W. 2006. Between responsibility and rhetoric: some consequences of CSR practice in Nigeria's oil province. *Development Southern Africa,* 23**,** 223-240.

AKPAN, W. 2007a. Oil, People, and Environment: Understanding Land-Related Controversies in Nigeria's Oil Region.

AKPAN, W. 2007b. OIL, PEOPLE AND THE ENVIRONMENT: UNDERSTANDING LAND-RELATED CONTROVERSIES IN NIGERIA'S OIL REGION.

AKUJURU, V., A. & UKAIGWE, N., F. (eds.) 2001. *Principles and Practice of Environmental Management and Auditing (The Nigerian Experience),* Port Harcourt: Pearl Publishers.

AKUJURU, V. A. & RUDDOCK, L. 2014. Incorporation of Socio-Cultural Values in Damage Assessment Valuations of Contaminated Lands in the Niger Delta. *Land,* 3**,** 675-692.

ALAGOA, E., JOE 2005. *A History of the Niger Delta, an Historical Interpretation of Ijo Oral Tradition* Port Harcourt, Onyoma Research Publications.

ALPERIN, B. J. Verifying Damaged Property Transactions. Valuations, 2000. Appraisal Institute.

ALUKO, B. T. 2007. Examining valuer's judgement in residential property valuations in metropolitan Lagos, Nigeria. *Property Management,* 25**,** 98-107.

ANDERSON, O., C. 2001. Environmental Contamination: An Analysis in the Context of DC Matrix. *The Appraisal Journal,* July**,** 322-332.

ANTAI, I. 2003. *Valuation of Contaminated Land in Sweden: A Comparative Study.* M.Sc., Royal Institute of Technology, KTH.

BABAWALE, G. 2008. An evaluation of factors influencing inaccuracy in residential property valuation in Lagos metropolis. *Unpublished PhD Thesis Submitted to the Department of Estate Management, Faculty of Environmental Sciences, University of Lagos, Akoka, Yaba*.

BABAWALE, G. K. 2013. Emerging Issues in Compensation Valuation for Oil Spillage in the Niger Delta Area of Nigeria. *Journal of Reviews on Global Economics,* 2**,** 31-45.

BABAWALE, G. K. & OMIRIN, M. 2012. An assessment of the relative impact of factors influencing inaccuracy in valuation. *International Journal of Housing Markets and Analysis,* 5**,** 145-160.

The World Bank, 2014. Nigeria Economic Report. *Nigeria economic report ; no. 2.* Washington, DC World Bank Group.

The World Bank, 1995. Defining an Environmental Development Strategy for the Niger Delta. Washington DC: World Bank.

BARBIER, E. B. 1993a. SUSTAINABLE USE OF WETLANDS - VALUING TROPICAL WETLAND BENEFITS - ECONOMIC METHODOLOGIES AND APPLICATIONS. *Geographical Journal,* 159**,** 22-32.

BARBIER, E. B. 1993b. Sustainable Use of Wetlands Valuing Tropical Wetland Benefits: Economic Methodologies and Applications. *The Geographical Journal,* 159**,** 22-32.

BARBIER, E. B. 1997. The economic determinants of land degradation in developing countries. *Philosophical Transactions of the Royal Society of London. Series B: Biological Sciences,* 352**,** 891-899.

BARBIER, E. B., ACREMAN, M. & KNOWLER, D. Economic valuation of wetlands: a guide for policy makers and planners. 1997. Ramsar Convention Bureau Gland, Switzerland.

BARDECKI, M. J. 1998. Wetland and Economics: An Annotated Review of Literature 1988-1998. *Environment Canada*.

BARTKE, S. 2011. Valuation of market uncertainties for contaminated land
International Journal of Strategic Property Management 15 356-378.

BARUNGI, B. 2014. *NIGERIA-African Economic Outlook* [Online]. Tunis, Tunisia: African Development Bank Group, OECD Group, UNDP Group. Available: http://www.africaneconomicoutlook.org/fileadmin/uploads/aeo/2014/PDF/CN_Long_EN/Nigeria_EN.pdf [Accessed 17/11/14 2014].

BELL, R. 1998. The Impact of Detrimental conditions on property values. *The Appraisal Journal,* 66**,** 380-391.

BELL, R. 2008. *Real estate damages: applied economics and detrimental conditions,* Chicago, IL, The Appraisal Institute.

BELL, R. & AL, E. 2008. *Real Estate Damages: Applied Economics and Detrimental Conditions,* Chicago, Appraisal Institute.

BERKES, F. & FOLKE, C. (eds.) 1998. *Linking Social and Ecological Systems,* Cambridge: Cambridge University Press.

BERKOWITZ, L. 1989, . Frustration-Aggression Hypothesis: Examination and Reformulation *Psychological Bulletin* Vol. 106, **,** 59-73

BEST, S. G., PROGRAMME, U. F. P. A. & COMMISSION, N. N. U. 2006. *Introduction to peace and conflict studies in West Africa: a reader*, Spectrum Books.

BLACK, R., T., BROWN, G., M., DIAZ, J., GIBLER, K., M. & GRISSOM, T. V. 2003a. Behavioural research in real estate: a search for the boundaries. *Journal of Real Estate Practice and Education,* 6**,** 85-112.

BLACK, R. T., BROWN, G. M., DIAZ, J., GIBLER, K. M. & GRISSOM, T. V. 2003b. Behavioural research in real estate: a search for the boundaries. *Journal of Real Estate Practice and Education,* 6**,** 85-112.

BLOWFIELD, M. & FRYNAS, J. G. 2005. Editorial Setting new agendas: critical perspectives on Corporate Social Responsibility in the developing world. *International Affairs,* 81**,** 499-513.

BOARD, A. F. A. S. 2005. *Uniform standards of professional appraisal practice,* Chicago, Appraisal Foundation.

BOND, S. 2001. The use of conjoint analysis to assess the impact of environmental stigma. *Pacific Rim Property Research Journal,* 7**,** 182-191.

BOND, S., SIMS, S. & DENT, P. 2013. *Towers, Turbines and Transmission Lines: Impacts on Property Value*, John Wiley & Sons.

BOWEN, G., A. 2009. Document Analysis as a Qualitative Research Method. *Qualitative Research Journal,* 9.

BOYKIN, J., H. 2001. *Land Valuation, Adjustment Procedures and Assignments,* Chicago, IL, Appraisal Institute.

BRANDER, L. M., FLORAX, R. & VERMAAT, J. E. 2006a. The empirics of wetland valuation: A comprehensive summary and a meta-analysis of the literature. *Environmental & Resource Economics,* 33**,** 223-250.

BRANDER, L. M., FLORAX, R. J. & VERMAAT, J. E. 2006b. The empirics of wetland valuation: a comprehensive summary and a meta-analysis of the literature. *Environmental and Resource Economics,* 33**,** 223-250.

BSI 1988. Draft for Development Code of Practice for the Identification of Potentially Contaminated Land and its Investigation. London: British Standard Institution.

BURNARD P, GILL P, STEWART K, TREASURE E & B., C. 2008. Analysing and presenting qualitative data. *Br Dent Journal,* 204**,** 429-432.

BURNS, R., B. 1997. *Introduction to Research Methods,* Melbourne, Longmans.

BLACK, C., AKINTOYE, A.,& FITZGERALD, E. 2000. An analysis of success factors and benefits of partnering in construction. International Journal of Project Management, Vol. 18, Iss. 6, 423-434.

BUSINESSDAY 2014. Nigeria Market Report. *BusinessDay Online.* April 7, 2014 ed. Apapa, Lagos: Business Day Newspapers.

BYRNE, D. 2011. *Applying social science: the role of social research in politics, policy and practice*, Policy Press.

CAMPANALLA, J. 1984. Valuing partial losses in contamination cases. *The Appraisal Journal,* 52**,** 301-304.

CARPENTER, S. R., BENNETT, E. M. & PETERSON, G. D. 2006. Scenarios for ecosystem services: an overview. *Ecology and Society,* 11.

CASTELLAN, C. M. 2010. Quantitative and qualitative research: a view for clarity. *International Journal of Education,* 2.

CHALMERS, J. A. & ROEHR, S. A. 1993. Issues in the Valuation of Contaminated Properties. *The Appraisal Journal,* Jan.

CHURCHMAN, M., C. 1995. Managing Legitimacy: Strategic and International Approaches. *The Journal of Academy and Management Review,* 20**,** 571-610.

CLEVELAND, C., HOGAN, C. M. & SAUNDRY, P. 2010. Deepwater Horizon oil spill. *The Encyclopedia of Earth*.

COFFMAN, M. S. 2002. Why Property Rights Matter *American Land Foundation***,** 1-32.

COLEMAN, S. 2006. Scope of Work and Problem Identification: The Significant Seven. *Appraisal Journal,* 74**,** 232-238.

COLLIN, N. 2005. *Introduction to Research and Methods,* Bradford, UK, University of Bradford.

CORBIN, J. & STRAUSS, A. 2008. *Basics of qualitative research: Techniques and procedures for developing grounded theory*, Sage.

COSTANZA, R., FARBER, S. C. & MAXWELL, J. 1989. Valuation and management of wetland ecosystems. *Ecological Economics,* 1**,** 335-361.

COTULA, L. 2008. The Property Rights Challenges of Improving Access to Water for Agriculture: Lessons from the Sahel 1. *Journal of Human Development,* 9**,** 5-22.

CRESWELL, J., W. & CLARK, P., VICKI, L. 2011. *Designing and Conducting Mixed Methods Research,* California, Sage.

CRESWELL JOHN, W. 2003. *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches,* California 91320, USA, SAGE Publications, Inc.

CROSBY, N. 2000. Valuation accuracy, variation and bias in the context of standards and expectations. *Journal of Property Investment & Finance,* 18**,** 130-161.

CROSSAN, F. 2003. Research Phylosophy: towards an understanding. *Nurse Researcher,* 11**,** 46-55.

CROTTY, M. 1998. *The Foundations of Social Research,* London, SAGE Publications, Inc.

CURTIS, I., A. 2004. Valuing ecosystem goods and services: a new approach using a surrogate market and the combination of a multiple criteria analysis and a Delphi panel to assign weights to attributes. *Ecological Economics,* 50**,** 163-194.

CUSPAP 2010. Uniform Standard of Professional Appraisal Practice. Washington DC: Appraisal Foundation.

D'ZURILLA, T. J. & NEZU, A. 1982. Social problem-solving. *PC Kendall (Éd), Advances in cognitive-behavioral research and therapy***,** 201-274.

DALY, H. E. & COBB, J. B. 1989. *For the Common Good,* Boston, Beacon Press.

DANCE, S. 1993. Valuing Contaminated Land. *Property Review*.

DE GROOT, R., S, WILSON, M., A & BOUMANS, R., M. J 2002a. A typology for the classification, description and valuation of ecosystem functions, goods and services. *Ecological Economics,* 4**,** 393-408.

DE GROOT, R., SYUIP, M., FINALYSON, M. & DAVIDSON, N. 2006. Valuing Wetlands: Guidance for valuing the benefits derived from wetland ecosystem services. *CBD Technical Series No. 27.* Gland, Switzerland: Ramsar Convention.

DE GROOT, R. S., WILSON, M. A. & BOUMANS, R. M. 2002b. A typology for the classification, description and valuation of ecosystem functions, goods and services. *Ecological economics,* 41**,** 393-408.

DE SOTO, H. 2000. *The Mystery of Capital,* New York, Basic Books.

DEFRANCESCO, E., GATTO, P., ROSATO, P. & BOZZOLAN, I. 2012. The valuation of Environmental Damage Compensation: An Integrated Framework. *RivistaSiev,* 9**,** 1-12.

DEL ROSS, P. & CONSULTANTS, C. C. E. Appraisal Of Environmentally Contaminated Property For Tax Reduction.

DELISLE, J., R. 1985. Behavioral Theory and Residential Appraisal. *The Appraisal Journal*.

DELT, W. & IGBEN, J. L. 2012. Environmental Degradation. *Sacha Journal of Environmental Studies,* 2**,** 70-80.

DENSCOMBE, M. 2007. The Good Research Guide for small scale social research projects. Maidenhead, UK: Open University Press.

DENZIN, N. K. 1970. *The research act: A theoretical introduction to sociological methods*, Transaction publishers.

DENZIN, N. K. & LINCOLN, Y. S. 2000. *Handbook of Qualitative Research,* Thousand Oaks, California, USA, SAGE Publishers Inc.

DEW, N. 2007. Abduction: a pre-condition for the intelligent design of strategy. *Journal of Business Strategy,* 28**,** 38-45.

DIAZ, J. 1990. How appraisers do their work: a test of the appraisal process and the development of a descriptive model. *Journal of Real Estate Research,* 5**,** 1-15.

DIAZ, J. 1999. The first decade of behavioural research in the discipline of property. *Journal of Property Investment & Finance,* 17**,** 326-332.

DICTIONARY, B. 2012. Business dictionary. *Retrieved April,* 17**,** 2012.

DING, C. 2007. Policy and praxis of land acquisition in China. *Land use policy,* 24**,** 1-13.

DIXON, J. A. & PAXIOLA, S. Local costs, global benefits: valuing biodiversity in developing Countries. Valuation of Biodiversity Benefits: Selected Studies, 18-19 October 1999 1999 Paris. Organisation for Economic Co-operation and Development.

DIXON, T., C. 1995. Lessons from America: Appraisal and Lender Liability Issues in Contaminated Real Estate. Reading: The College of Estate Management.

DOANE, D. 2005. Beyond Corporate social responsibility: minnows, mammoths and markets. *Futures,* 37**,** 215-229.

DOE 1995. Survey of Derelict Land in England 1993. *In:* ENVIRONMENT, D. O. (ed.). London: HMSO.

DOLLARD, J., DOOB, L., MILLER, N., MOWRER, O., & SEARS, R. 1939. *Frustration and aggression,* New Haven, CT, Yale University Press.

EBEKU, K. S. 2001a. Oil and the Niger Delta People: The Injustice of the Land Use Act. *CEPMLP/JOURNAL,* 9.

EBEKU, K. S. A. 2001b. OIL AND THE NIGER DELTA PEOPLE: THE INJUSTICE OF THE LAND USE ACT *CEPMLP/JOURNAL,* 9.

EBERLIN, E. 2014. *What is a Property Manager* [Online]. About.com. [Accessed 30/05/14 2014].

ELAIGWU, J. I. 1994. Ethnicity and the Federal Option in Africa. *The Journal of Federalism,* 1.

EMERTON, L. & KEKULANDA, L. D. C. B. 2003. Assessment of the Economic Value of Muthurajawela Wetland. Sri Lanka.

ENVIRONMENTAGENCY 2004. Contaminated Land Report 11, Model Procedures for the Management of Land Contamination. *Land Contamination.* Bristol: Environment Agency.

ENVIRONMENTAL, P. I. Site Assessment Process1.

ENVIRONMENTAL RESOURCES MANAGERS LTD 1998. Niger Delta Environmental Survey Final Report, Phase I ed. Lagos.

FANNING, S., GRISSOM, T. & PEARSON, T. 1994. *Market Analysis for Valuation Appraisals,,* Chicago, Illinois Appraisal Institute.

FANON, F. & . 1963. *The Wretched of the Earth*, Grove Press.

FAO. 2008. *Food and agriculture organization of the United Nations* [Online]. Available: faostat.fao.org [Accessed 12 November 2013].

FIBERESIMA, A. 1999. Customary land holding at Okrika in indigenous land tenure of Rivers people. *Port Harcourt, News Fair Communication*.

FLYVBJERG, B. 2006. Five Misunderstandings About Case-Study Research. *Qualitative Inquiry,* 12**,** 219-243.

FREEMAN III, A. M. 1991. Valuing environmental resources under alternative management regimes. *Ecological Economics,* 3**,** 247-256.

FRENCH, N. 2007. Valuation Uncertainty: Common Professional Standards and Methods. *Pacific Rim Real Estate Society Conference.* Freemantle- Western Australia.

FRENCH, N. & GABRIELLI, L. 2004. The uncertainty of valuation. *Journal of Property Investment & Finance,,* Vol. 22 484-500.

FRYNAS, J. G. 2005. The false developmental promise of Corporate Social Responsibility: evidence from multinational oil companies. *International Affairs,* 81**,** 581-598.

GABRIEL, A. O. I. 2004. Women in the Niger Delta: Environmental Issues and Challenges in the Third Millennium. *Journal of Sustainable Development in Africa,* Fall.

GALLIMORE, P. 1996. Confirmation bias in the valuation process: a test for corroborating evidence. *Journal Of Property Research,* 13**,** 261-273.

GEORGE, C., ADOKIYE 2009. Land Tenure and Oil Compensation Schemes: obstacles for gender-sensitive poverty alleviation in the Niger Delta. *In:* FAO-IFAD-ILO (ed.) *Workshop on Gaps, trends and Current Research in gender dimensions of agricultural and rural employment: differentiated pathways out of poverty.* Rome.

GILMORE, D. M. 1992. *An assessment of lending criteria and procedures in the face of threat of contaminated land.* MBA, City University.

GRAASKAMP, J. A. (ed.) 1991. *The Need for Redefinition of the Appraisal Process,* Washington, D. C.: Urban Land Institute.

GRAASKAMP, J. A. 1992. Institutional constraints on, and forces for, evaluation of appraisal precepts and practices. *Journal of Property Valuation and Investment,* 10**,** 603-618.

GUEST, G., BUNCE, A. & JOHNSON, L. 2006. How many interviews are enough? An experiment with data saturation and variability. *Field methods,* 18**,** 59-82.

HAINES-YOUNG R & POTSCHIN, M. (eds.) 2009. *The links between biodiversity, ecosystem services and human well-being.,* Cambridge: Cambridge University Press.

HARDIN, L. E. 2003. Problem-solving concepts and theories. *Journal of veterinary medical education,* 30**,** 226-229.

HAVARD, T. M. 2001. An experimental evaluation of the effect of data presentation on heuristic bias in commercial valuation. *Journal of Property Research,* 18**,** 51-67.

HICKS, M., J. 1991. *Problem Solving in Business and Management, Hard, Soft and Creative Approaches,* London, Chapman and Hill.

HOWARTH, R., B. & FARBER, S. 2002. Accounting for the value of ecosystem services. *Ecological Economics,* 41**,** 421-429.

HOWE, C. W. & COCHRANE, H. C. 1993. *RE: "Guidelines for the uniform definition, identification, and measurement of economic*

damages from natural hazard events: With comments on historical assets, human capital, and natural capital". Type to COMMONS., L. D. L. P. F. M. H. I. F. A. S.

IAAO 2001. Standard on the Valuation of Properties Affected by

Environmental Contamination. Chicago: International Association of Assessing Officers.

IDEMUDIA, U. 2011. Corporate social responsibility and developing countries. *Progress in Development Studies,* 11**,** 1-18.

IDEMUDIA, U. & ITE, U. E. 2006a. Corporate–community relations in Nigeria's oil industry: challenges and imperatives. *Corporate Social Responsibility and Environmental Management,* 13**,** 194-206.

IDEMUDIA, U. & ITE, U. E. 2006b. Demystifying the Niger Delta conflict: Towards an integrated explanation. *Review of African Political Economy,* 33**,** 391-406.

INSTITUTE, A. 2008. *The Appraisal of Real Estate,* Chicago, USA, Appraisal Institute.

INTERNATIONAL, A. 2009. *'Nigeria: Petroleum, Pollution and Poverty in the Niger Delta' report'* [Online]. London: Amnesty International. Available: http://www.amnesty.org/en/library/asset/AFR44/017/2009/en/e2415061-da5c-44f8-a73c-a7a4766ee21d/afr440172009en.pdf [Accessed November, 10 2013].

INTERNATIONAL, A. 2011. The True 'Tragedy' Delays and Failure in Trackling Oil Spills in the Niger Delta. *Amnesty International.* November ed. London: Amnesty International Limited.

ITE, U. E. 2004. Multinations and Corporate Social Responsibility in Developing Countries: A Case Study of Nigeria. *Corporate Social Responsibility and Environmental Management,* 11**,** 1-11.

IVSC 2003. International Valuation Standards 2003. London: International Valuation Standards Committee.

IVSC 2007. *International Valuation Standards,* London, International Valuations Standards Committee.

IVSC 2013. *International Valuation Standards,* London, International Valuation Standards Committee.

JABAREEN, Y. R. 2009. Building a conceptual framework: philosophy, definitions, and procedure. *International Journal of Qualitative Methods,* 8**,** 49–62.

JACKSON, T., O 1998. Mortgage-Equity Analysis in Contaminated Properties *Appraisal Journal,* 66**,** 46-55.

JACKSON, T., O. 2001. The Effects of Environmental Contamination on Real Estate: A Literature Review. *Journal of Real Estate Literature,* 9**,** 93-115.

JACKSON, T., O. 2003. Methods and Techniques for Contaminated Property Valuation. *The Appraisal Journal,* April**,** 127-133.

JOHNSON, R. B. & ONWUEGBUZIE, A. J. 2004. Mixed methods research: A research paradigm whose time has come. *Educational researcher,* 33**,** 14-26.

KADAFA, A., AYUBA 2012. Environmental Impacts of Oil Exploration and Exploitation in the Niger Delta of Nigeria. *Global Journal of Science Frontier Research Environment and Earth Sciences,* 12**,** 1-14.

KAKULU, I. I. 2008. The assessment of compensation in compulsory acquisition of oil-and gas-bearing lands in the Niger Delta.

KAZMIERCZAK, R. F. 2001. Economic Linkages between Coastal Wetlands and Hunting and

Fishing: A Review of Value Estimates Reported in the Published Literature. Baton Rouge: Louisiana State University Agricultural Center, Staff Paper 2001 – 03.

KEATING, D., MICHAEL 2002. *The Valuation of Wetlands,* Chicago IL, Appraisal Institute.

KENNEDY, P., J. 1997. *Investment Valuation of Contaminated Land and UK Practice: A Study with Special Reference to Former Gasworks.* PhD, The Nottingham Trent University.

KERRY, D. V. 2007. Expanding the academic discipline of real estate valuation: A historical perspective with implications for the future. *Journal of Property Investment & Finance,* 25**,** 427-443.

KINNARD, W., N. 1998. *The Valuation of Contaminated Properties and Associated Stigma: a comparative review of practice and thought in the United States of America, the United Kingdom and New Zealand* [Online]. London: RICS. Available: www.rics.org/site/scripts/downloads_info.aspx?fileID=450 [Accessed June16 2012].

KINNARD, W. N., LENK, M. M. & WORZALA, E. M. 1997. ``Client pressure in the commercial appraisal industry: how prevalent is it?''. *Journal of Property Valuation and Investment,,* 15**,** 233-244.

KOPP, R., J. & SMITHKERRY, V. (eds.) 1993. *Valuing Natural Assets: The Economics of Natural Resource Damage Assessment,* Washington DC: Resources for the Future.

KREJCIE, R. V. & MORGAN, D. W. 1970. Determining sample size for research activities. *Educ Psychol Meas.*

KRUTILLA, J. V. 1967. Conservation reconsidered. *American Economic Review,* 57**,** 777-786.

KUHN, T. S. 1970. *The Structure of Scientific Revolutions,* Chicago, USA, University of Chicago Press.

KUMAR, R. 2011. *Research Methodology, a step- by- step guide for beginners,* London, Sage.

KUMMEROW, M. 1997. Logical Steps in Property Valuation. *The Appraisal Journal,* 65**,** 25-31.

KUMMEROW, M. 2003. Theory for Real Estate Valuation: An Alternative Way to Teach Real Estate Price Estimation Methods. *research monograph, Department of Land Economy and Valuation, Curtin University, Perth,* 29.

KUMMEROW, M. 2006. Protocols for Valuations. *Appraisal Journal,* 74.

KUZEL, A. J. 1992. Sampling in qualitative inquiry.

LAMBERT, A. 2003. Economic valuation of wetlands: an important component of wetland management strategies at the river basin scale. *Ramsar bureau* http://www*. ramsar. org/features/features_econ_val1. htm*.

LAWSON, J., W. W. 2008. *Theory of Real Estate Valuation.* M.Sc., Royal Melbourne Institute of Technology.

LEVY, D. 2006. Qualitative Methodology and Grounded Theory in Property Research. *Pacific Realm Property Research Journal,* 12**,** 369-388.

LEVY, D. & SCHUCK, E. 1999. The influence of clients on valuations. *Journal of Property Investment & Finance,* 17**,** 380-400.

LFN 2004. Cap. P10. *In:* RESOURCES, M. O. P. (ed.). Abuja: Government Press.

LIM, E. & ALUM, J. 1995. Construction productivity: issues encountered by contractors in Singapore. *International Journal of Project Management,* 13**,** 51-58.

LIPTON, D., W., KAHTERINE, W., ISOBER, S., C. & RODNEY, W., F. 1995. Economic Valuation of Natural Resources- A Handbook for Coastal Policy Makers. *In:* COMMERCE, U. S. D. O., ADMINSTRATION, N. O. A. A. & OFFICE, C. O. (eds.). Silver Springs, MD 20910: NOAA Coastal Ocean Office.

LIZIERI, C., PALMER, S., CHARLTON, M. & FINLAY, L. 1996. Valuation Methodology and Environmental Legislation: A Study of The UK Commercial Property Industry. *In:* BARRETT, P. P. (ed.) *RICS Research Paper Series.* Bristol: RICS.

LOCKWOOD, C. 1994. Asset Value and the Environment. *Chartered Surveyor Weekly,* January**,** 14-15.

LORENZ, D. & LÜTZKENDORF, T. 2008. Sustainability in property valuation: theory and practice. *Journal of Property Investment & Finance,* 26**,** 482-521.

LUSHT, K. M. 1997. *Real Estate Valuations Principals and Applications,* Chicago, IL, Irwin.

MAHAN, B. L. 1997. Valuing Urban Wetlands: A Property Pricing Approach. *In:* RESOURCES, U. S. A. C. O. E. I. F. W. (ed.). Alexandria, Virginia.: U.S. Army Corps of Engineers Institute for Water Resources.

MARSHALL, M., N. 1996. Sampling for Qualitative Research. *Family Practice,* 13**,** 522-525.

MCLEAN DAVID, G. & BILL, M. 1998. The Addition of Contingent Valuation and Conjoint Analysis to the Required Body of Knowledge for the Estimation of Environmental Damages to Real Property. *Journal of Real Estate Practice and Education,* 1**,** 1-19.

MEYER, C., BENEDICHTE 2001. A Case in Case Study Methodology. *Field Methods,* 13**,** 329-352.

MILES, M. B. & HUBERMAN, A. M. 1994. *Qualitative data analysis: An expanded sourcebook*, Sage.

MILLENNIUM ECOSYSTEM ASSESSMENT 2005. Living beyond our means: natural assets and human well-being.

MILLER, R. D. 1975. Surficial geological map of the Juneau Urban area and Vicinity, Alaska. *In:* 1-885, U. S. G. S. M. I. S. M. (ed.). Alaska: U. S. Geological Survey.

MILLINGTON, A. 2003. *Professional Issues for Property People*, Gulf Professional Publishing.

MILLS, A., J., EUREPOS, G. & WIEBE, E. 2010. Encyclopaedia of Case Studies. *In:* MILLS ALBERT, J., GABRIELLE, E. & ELDEN, W. (eds.) *Encyclopaedia of Case Studies.* California: Sage.

MITCHELL, R. K., AGLE, B. R. & WOOD, D. J. 1997. Toward a theory of stakeholder identification and salience: Defining the principle of who and what really counts. *Academy of management review,* 22**,** 853-886.

MOIR, L. 2001. What do we mean by corporate social responsibility? *Corporate governance,* 1**,** 16-22.

MOOYA, M., M & CLOETE, C., E. 2007. Informal Urban Property Markets and Poverty Alleviation: A Conceptual Framework. *Urban Studies,* 44**,** 147-165.

MORGAN, J. F. 1998. The natural history of professionalisation and its effects on valuation theory and practice in the UK and Germany. *Journal of Property Valuation and Investment,* 16**,** 185-206.

MORSE, J. M. 2000. Determining sample size. *Qualitative Health Research,* 10**,** 3-5.

MUNDY, B. 1992a. Stigma and Value. *Appraisal Journal,* 62**,** 7-13.

NDDC 2006. Niger Delta Regional Development Master Plan. *In:* GOVERNMENT, O. O. T. S. T. T. F. (ed.). Abuja: South-Sea Datcomm Limited.

NDLOVU, M. 2008. *Developing an Appropriate Model for Regional Cooperation in Developing Countries- The Case of SADC.* PhD Full Thesis, University of South Africa.

NIGERIA, G. O. 2004. Land Use Act. *In:* NIGERIA, F. G. O. (ed.) *Cap. L5, LFN. 2004.* Abuja: Government Press.

NNPC 2002. Nigerian Department of Petroleum Resources, Environmental Guidelines and Standards for the Petroleum

Industry in Nigeria (EGASPIN) (Revised Edition, 2002). Abuja, Nigeria: Nigerian National Petroleum Corporation.

NRC & COUNCIL), N. R. 2003. *Oil in the Sea 3: Inputs, Fates, and Effects,* Washington D. C., National Academy.

NUHU, M., BASHAR 2008. Compulsory Purchase and Payment of Compensation in Nigeria: A Case Study of Federal Capital Territory (FCT) Abuja. *Nordic Journal of Surveying and Real Estate Research,* 3**,** 102-126.

NWAFOR, J. C. An Appraisal of the Impact of Corporate Social Responsibility Efforts by Oil and Gas Companies on Sustainable Development in the Niger Delta. *In:* DARAMOLA, A., ADEOYE, A., AKINOLA, R., ALAGBE, W. & AJAYI, S., eds. Sustainable Development and Environmental Protection, Strategies for Developing Nations, 2010 Bells University of Technology, Ota, Nigeria. Institute for Environment Research and Development.

NWANKWO, N. Oil and Environment Pollution. *In:* NISER, ed. Strategies for the Fifth National Development Plan 1986-1990, November 1984 Ibadan. Nigerian Institute of Social and Economic Research.

NWANKWO, N. & IFEADI, C. 1988. Case studies on the environmental impact of oil production and marketing in Nigeria. *University of Lagos, Nigeria*.

NWILO, P. & BADEJO, O. Oil spill problems and management in the Niger Delta. International Oil Spill Conference, 2005. American Petroleum Institute, 567-570.

NWILO, P., C. & BADEJO, O., T. 2007. Impacts of Oil Spill Pollution Along the Nigerian Coastal Areas. *International Federation of Surveyors.*

NWLR 1995. Shell Pet. Dev. Co. v Farah. *In:* APPEAL, C. O. (ed.) *CA/PH/9/92.* Lagos, Nigeria.

ODULARU, G. O. 2008. Crude Oil and Nigerian Economic Performance. *Oil and Gas Business*.

OGEDENGBE, P. 2007a. Compulsory acquisition of oil exploration fields in Delta State, Nigeria: The compensation problem. *Journal of Property Investment & Finance,* 25**,** 62-76.

OGEDENGBE, P. S. 2007b. Compulsory acquisition of oil exploration fields in Delta State, Nigeria: The compensation problem. *Journal of Property Investment & Finance,* 25**,** 62-76.

OKENABIRHIE, T. O. 2009. *Polluter Pays Principle in the Nigeria Oil and Gas Industry: Rhetoric or Reality?* [Online]. Dundee: CEPMLP. [Accessed May 14 2014].

OKONTA, I. & ORONTO, D. 2001. *Where Vultures Feast, Forty Years of Oil in the Niger Delta,* Ibadan: , Kraft Books Limited.

OMEJE, K. 2006. The Rentier State: Oil-related Legislation And Conflict In The Niger Delta, Nigeria. *Conflict, Security & Development,* 6**,** 211-230.

OMEJE, K. 2007. The Rentier State: Oil-related Legislation And Conflict In The Niger Delta, Nigeria. *Conflict, Security & Development,* 6**,** 211-230.

ONWUEGBUZIE, A., J. & LEECH, N., L. 2007. A typology of mixed methods design. *Qualitative, Quantitative Journal,* 43**,** 265-275.

OTEGBULU, A., CHIKA 2009. Legal and economic review of nayural resources compensation valuation practice in Niger Delta area of Nigeria. *RICS COBRA Research Conference.* University of Cape Town.

PAGOURTZI, E., ASSIMAKOPOULOS, V., HATZICHRISTOS, T. & FRENCH, N. 2003. Real estate appraisal: a review of valuation methods. *Journal of Property Investment & Finance,* 21**,** 383-401.

PALLANT, J. 2007. *SPSS Survival Manual,* Maidenhead, Open University Press.

PATCHIN, P. 1988. Valuation of Contaminated Properties. *Appraisal Journal,* 56**,** 7-16.

PAUL, R. 1993. *Critical Thinking,* Santa Rosa, California, USA, Foundation for Critical Thinking.

PETERSON, G. L. & SORG, C. L. 1987. Toward the measurement of total economic value. *In:* UNITED STATES DEPARTMENT OF AGRICULTURE, F. S. (ed.). Rocky Mountain Forest and Range Experiment Station.

RATCLIFF, R. U. 1972. *Valuation for Real Estate Decisions,* Santa Cruz, CA., Democrat Press.

RCEP 1984. Tackling Pollution- Experience and Prospects. *In:* ENVIRONMENT, D. O. (ed.). London: HMSO.

REYNOLDS, S. J., SCHULTZ, F. C. & HEKMAN, D. R. 2006. Stakeholder theory and managerial decision-making: Constraints and implications of balancing stakeholder interests. *Journal of Business Ethics,* 64**,** 285-301.

RICHARDS, T. 1996. The Valuation and Appraisal of Contaminated Land and Property. *The Cutting Edge.* London: RICS.

RODDEWIG, R., J. 1999. Classifying the Level of Risks and Stigma Affecting Contaminated Properties. *Appraisal Journal,* 67**,** 98-102.

ROWLEY, J. 2002. Using case studies in research. *Management research news,* 25**,** 16-27.

RUST, R. O. & COLLINS, H. G. 1996. *Land Valuations and Compensation in Australia,* Sydney, Australian Institute of Valuers.

SALAU, A. J. 1993. Environmental Crises and Development in Nigeria. *Inaugural Lectures.* Port Harcourt, Nigeria: University of Port Harcourt.

SANDELOWSKI, M. 1995. Sample size in qualitative research. *Research in nursing & health,* 18**,** 179-183.

SARANTAKOS, S. 2003. *Social Research,* South Yarra 3141, Australia, MacMillan Publishers Australia PTY Ltd.

SAUNDERS, M., LEWIS, P. & THORNHILL, A. 2012. *Research Methods For Business Students,* Essex, United Kingdom, Pearson Education Limited.

SCHRAM, J. F. 2012. *Real Estate Appraisal,* Bellevue WA 98005, Rockwell Publishing Company.

SHEARD, M., E. 1993. Valuation of Contaminated Land: Current Theory and Practice. *Journal of Valuation and Investment,* 11**,** 17-27.

SIMONS, R. A. 2006. *When bad things happen to good property*, Environmental Law Institute.

SMALL, G. 2006. Property economics and method: formalising the methodological parameters for the discipline.

SMALL, G. 2011. Property Economics and Method: Formalising The Methodological Parameters For The Discipline. *Pacific Rim Property Research Journal,* 12.

SNOW, C. C. & THOMAS, J. B. 1994. Field Research Methods in Strategic Management: Contributions to Theory Building and Testing. *Journal of Management Studies,* 31**,** 457-480.

SOGUNRO, O. A. 1997. Impact of Training On Leadership Development Lessons From a Leadership Training Program. *Evaluation Review,* 21**,** 713-737.

STEINER, R. 2011. Bodo Oil Spill Environmental Damage Assessment and Proposed Remediation Bodo, Nigeria Unpublished.

SUTRISNA, M. 2009. Research Methodology in Doctoral Research: Understanding the Meaning of Conducting Qualitative Research. *ARCOM Doctoral Workshop.* Liverpool John Moore's University.

SWALLOW, B., M., KALLESOE, M., F., IFTIKHAR, U., A., VAN NOORDWIJK, M., CARINA, B., SCHERR, S., J., RAJU, K. V., POATS, S., V., DURAIAPPAH, A., KUMAR, OCHIENG, B., O, MALLEE, H. & RUMLEY, R. 2009. Compensation and Rewards for Environmental Services in the Developing World: Framing Pan-Tropical Analysis and Comparison. *Ecology and Society,* 14.

SYMS, P., M. 1996. Environmental Impairment: Further Developments in An Approach to Valuation. *The Cutting Edge.* London: RICS.

SYMS, P. M. 1997. *Contaminated Land, The Practice and Economics of Redevelopment,* Oxford Blackwell Science Limited.

TAFF, S. J. 1992. What is a Wetland Worth? Concepts and Issues in Economic Valuation. University of Minnesota, Department of Applied Economics.

TALLMAN, I., LEIK, R. K., GRAY, L. N. & STAFFORD, M. C. 1993. A theory of problem-solving behaviour. *Social Psychology Quarterly***,** 157-177.

TASHAKKORI, A. & CRESWELL, J. W. 2007. Editorial: The new era of mixed methods. *Journal of mixed methods research,* 1**,** 3-7.

TASHAKKORI, A. & TEDDLIE, C. 2003. *Handbook of mixed methods in social & behavioural research*, Sage.

TAYLOR, S. S., FISHER, D. & DUFRESNE, R. L. 2002. The Aesthetics of Management Storytelling A Key to Organizational Learning. *Management Learning,* 33**,** 313-330.

TELLIS, W. 1997a. Introduction to Case Study. *The Qualitative Report,* 3.

TELLIS, W. 1997b. Results of a case study on information technology at a university. *The qualitative report,* 3**,** 76.

THOMAS, G. 2011. *How to do Case Study: A Guide for Students & Researchs,* London, Sage.

TURNER, K., R., PEARCE, D. & BATEMAN, I. 1993. *Environmental Economics, an elementary introduction,* Baltimore, The John Hopkins University Press.

TURNER, R. K., MORSE-JONES, S. & FISHER, B. 2010. Ecosystem valuation. *Annals of the New York Academy of Sciences,* 1185**,** 79-101.

U., E. 1993. Green Paper on Remedying Environmental Damage. *Com. 93/47.* Brussels: European Union.

UBA, G. S. & AACI, P. Breakout 3 Detrimental Asset Valuation.

UCHENDU, V. C. 1979. State , Land, and Society in Nigeria: A Critical Assessment of Land Use Decree (1978). *Journal Of African Studies,* 6**,** 62-74.

UDOH, I. A., STAMMEN, R. M. & MANTELL, J. E. 2008. Corruption and oil exploration: expert agreement about the prevention of HIV/AIDS in the Niger Delta of Nigeria. *Health education research,* 23**,** 670-681.

ULIBARRI, C. A. & WELLMAN, K. F. 1997. Natural Resource Valuation: A Primer on Concepts and Techniques. *In:* ENERGY, U. S. D. O. (ed.). Washington DC: Environment Manager.

UNDP 2006a. Human Development Report 2006. 2006 ed. New York: Palgrave Macmillan.

UNDP 2006b. Niger Delta Human Development Report. Abuja, Nigeria: United Nations Development Programme.

UNEP 2011. Environmental Assessment of Ogoniland. Nairobi, Kenya: Uniten Nations Environment Programme.

USPAP 2005. Uniform Standards of Professional Appraisal Practice and Advisory Opinions. Washington, DC: Appraisal Foundation.

VATN, A. & BROMLEY, D., W. 1994. Choices without Prices without Apologies. *Journal of Environmental Economics and Management,* 26**,** 129-148.

VEAL, A. J. 2006. *Research methods for leisure and tourism: A practical guide*, Pearson Education.

VISSER, W. 2005. Are we world class n corporate citizenship? How do South African Companies measure up? *The Good Corporate Citizen: Pursuing Sustainable Business in South Africa, Trialogue***,** 118-123.

WATTS, M. 2012. A tale of two gulfs: life, death, and dispossession along two oil frontiers. *American Quarterly,* 64**,** 437-467.

WBSCD 1999. Corporate Social Responsibility, World Business Council for Sustainable Development.

WEBER, M. 1947. *The Theory of Social and Economic Organization*, Free Press, New York.

WHIPPLE, R. T. M. 1993. Valuation: A Problem-Solving Imperative. *Journal of Property Valuation and Investment,* 9**,** 325-343.

WHIPPLE, R. T. M. 1995. *Property Valuation and Analysis,* Sydney, Law Book.

WILSON, A., R. 1996. Emerging approaches to impaired property valuation. *The Appraisal Journal,* 64**,** 155-170.

WILSON, E., O 2002. *The Future of Life,* New York, Alfred A. Knopf.

WINKLER, R. 2006. Valuation of ecosystem goods and services

Part 1: An integrated dynamic approach. *Ecological Economics,* 59**,** 82-93.

WOOD, D. J. 1991. Corporate social performance revisited. *Academy of Management Review,* 16**,** 691-718.

WORLD-BANK 2011. Operational Manual, Annex A on Involuntary Resettlement. Washington, DC: World Bank.

WYATT, P. 2007. *Property Valuations,* Oxford, Blackwell Publishing Ltd.

WYMAN, D., SELDIN, M. & WORZALA, E. 2011. "A new paradigm for real estate valuation?". *Journal of Property Investment & Finance,* 29**,** .341 - 358.

YIN, R., K. 2009a. *Case Study Research Design and Methods,* California 91320, SAGE Publications, Inc.

YIN, R., K. 2009b. *Case Study Research: Design and Methods,* California 91320, SAGE Inc.

YIN, R. K. 1994. Case study research: design and methods. 1994. *Thousand Oaks, CA*.

YIN, R. K. 2003. *Case study research: Design and methods*, sage.