



AN EXAMINATION OF THE BASIS AND METHODS OF WETLAND VALUATION FOR COMPENSATION IN THE NIGER DELTA, NIGERIA

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Abstract: In assessing the worth of interest in any property, there are varieties of approaches available to the Estate Surveyor and Valuer. However, the approach chosen is usually a function of variety of factors such as the purpose of the valuation, the type of property, the basis of valuation. This study therefore examined the basis and methods adopted in the valuation of wetland resources in the Niger Delta. Questionnaire as well as personal and telephone interviews were adopted for data collection. Seventy-two (72) questionnaires were retrieved, collated, analysed and presented in the study using frequency distributions and percentages and relative importance index (RII). The study revealed that majority of Estate Surveyors and Valuers, in the Niger Delta adopted open market (61.8%) and cost (32.7%) bases for wetland valuation. Also, the study showed that in valuing wetland resources, respondents in the study area adopted methods that rely more on market evidence with market prices method ranked as having highest level of usage (RII = 3.15) followed by replacement cost method (RII = 3.03), cost-benefit analysis (RII = 2.96), hedonic pricing method (RII = 2.87) and production function (RII = 2.80). The study recommends that Estate Surveyors and Valuers should adopt total economic value basis for wetland valuation. Since contingent valuation method captures both the use and nonuse values of wetland resources it is recommended that Estate Surveyors and Valuers should adopt the method in valuing wetland resources for compensation. In addition, the Nigeria Valuation Standards and Guidance Notes should be reviewed with a view to including total economic value as a basis of wetland valuation and also include the identified methods for environmental valuation.

Keywords: Basis of Valuation, Compensation, Methods of Valuation, Wetlands, Niger Delta.

Introduction

Economic theory states that goods and factors of production have values due to their utility, scarcity and possibility of exchange in relation to uses to which individuals and/or group of people put them. Goods and services such as air, water, aesthetics and cultural heritage among others, in spite of their great benefits, do not possess these characteristics. The economic mindset, on utility and satisfaction derivable from goods, has led to excessive usage and degradation of the natural environment such as wetland. Many natural resources are consumed collectively hence the true values are not accounted for because there is no mechanism to enforce the property rights as they are perceived as public goods and services. To avert further degradation of the environment, resulting from lack of appreciation of the value of wetland, there must be explicit assessment of the value of environmental resources, in general, and wetland ecosystems in particular.

An environmental resource is not limited to the usual tangible items of real estate such as land, buildings, plant and machinery but includes both goods that are traded and not traded in the

market. There are also intangible items to consider such as human health and safety, the existence and preservation of flora, fauna, ecosystem and biological diversity; soil, water, air, climate and landscape; use of land, natural resources and raw materials. Other issues for consideration in environmental resource service are protected areas and designated sites of scientific, historical and cultural significance; heritage, recreation and amenity assets; and livelihood, lifestyle and well-being of those affected by a proposal (Dixon, 2008). Seabrook, Goodman and Jaffry (1997) assert that environmental resources denote more than utility used in defining a resource but include the nonuse aspects of the environment. The authors opine that a wrong perception of the environment results in the overuse and degradation of its resources, while the wrong perception of the environment by policy/decision makers results in the under-valuation of environmental resources. Dixon (2008) observes that while real estate is adequately priced in the open market, majority of environmental resources are not priced. The author states that this does not mean that such resources are completely

valueless. He states further that the focus of environmental valuation is to put monetary values on environmental goods and services, many of which have no easily observed market prices.

Barbier, Acreman and Knowler (1997) note that wetland resources are particularly susceptible to misallocation decisions because of the nature of the values associated with them. Wetlands perform an unusually large number of ecological functions and services which support economic activities. Many of these services are not marketed. In the case of tropical wetlands, many of the subsistence uses of wetland resources are also not marketed and are thus often ignored in development decisions. To capture the value of these functions and services require that the Estate Surveyor and Valuer adopts the techniques that take into consideration both the use and nonuse values of wetland ecosystems.

In the same vein, Lambert (2003) posits that natural resources have values that call for serious consideration by both the individual and the government. Such values include; improvement of water

quality, storing floodwaters, habitat for wildlife, wetlands contributes to the health of the planet and human wellbeing by ensuring food supply, regulating the atmosphere and providing raw materials for industry and medicine. Many natural products (shellfish, cranberries and timber) found in the economy come from wetlands. Wetlands provide valuable open space and create wonderful recreational opportunities. They provide tremendous economic benefits such as water supply, fisheries, agriculture, etc. 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. Translating these values into economic terms is necessary to convince policy makers of the importance of these ecosystems as life-supporting systems. This can only be achieved using appropriate valuation basis and method.

Valuing the economic benefits of wetlands can help set priorities and allocate spending on conservation initiatives. Valuation can also be used to consider the values attached to wetland ecosystems by the public and thereby encourage

their participation in certain initiatives. More specifically, valuation could assist Environmental Assessment (EA) decision-making by providing a reference value against which other economic factors could be compared in order to determine the significance of environmental effects – the bottom-line in most EAs. Many people seem not to be aware of the values of wetlands. Many think that they are no more than mosquito breeding areas. Most people only seem to care about what they love or what brings economic benefit to them. Wetland valuation is a way to estimate ecosystem benefits and it allows financial experts to carry out a Cost-Benefit analysis. It is therefore an important tool for environmental managers and decision makers to justify public spending on conservation activities and wetland management. By giving objective evidence of the monetary and non-monetary benefits of wetlands to managers and the public, environmentalists will gain additional support.

Compensation Valuation in Nigeria

The concept of compensation simply means recompense for loss (Babatunde, 2003). It is to place in the hands of the owner

expropriated, the full money equivalent of the thing of which he has been deprived. Compensation valuation has only been treated as one of the statutory valuations with basis and valuation techniques stipulated by law. The principle of compensation rests upon justice and equity, and this cannot be achieved without legal backing. Under Article 42(1), the 1989 Constitution of the Federal Republic of Nigeria has it that a right to compensation in the instance of compulsory acquisition is a fundamental human right hence claimants must be put in positions which are not different from their states before the occurrence of a possible disaster. Emphasis is placed more on prompt payment of compensation rather than on fair and adequate compensation. Other legal bases for assessing compensation in Nigeria, among others, include: State Lands Act No. 38 of 1968; Public Lands Acquisition (Miscellaneous Provision) Act 33 of 1976; Oil Pipelines Act (Cap. 338 LFN 1990); the Land Use Act, 1978 (Cap 202 of 1990), Petroleum Act, 1969 (Cap 350 of 1990), and the Mineral Act (Cap 226 of 1990).

The principle of equivalence is crucial to determining compensation: affected owners

and occupants shall be neither enriched nor impoverished as a result of the compulsory acquisition. In the opinion of Crawford (2007) financial compensation on the basis of equivalence of only the loss of land rarely achieves the aim of putting those affected in the same position as they were before the acquisition; the money paid cannot fully replace what is lost i.e. in some circumstances monetary compensation is either inadequate or inappropriate. According to Keith (2007), in developing countries where there is the financial resource limitation, less emphasis should be put on monetary compensation where resettlement or reinstatement are often the best means of putting the claimant back in the same position as if his/her land had not been taken from him /her.

The current legislation on compensation in Nigeria is the Land Use Act of 1978. Provisions for compensation under the Act are contained in Sec 29. The Act provides that the holder/occupier of the right of occupancy revoked for overriding public interest shall be entitled to compensation under the following heads of claims;

i. 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 Sec 29 (4a);

ii. Buildings, Installations, and Improvements thereon:

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 improvement 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 Sec 29 (4b);

iii. Crop: 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 Sec 29 (4c).

Compensation for oil spills goes a little beyond the general term of compensation due as a result of compulsory acquisition due to socio – economic components of the effects of such an environmental pollution. The

natural environment of wetland ecosystems includes both use and non-use goods. Therefore, any compensation paid/payable to the expropriated person should include the assessment of values for both groups. Otegbulu (2005) argues that the provision of the laws does not capture the full value of the natural resources as they do not place accurate value on them. Also, Otegbulu (2009) argues that there is an absence of a policy and legal framework for assessing full economic value to individual species based on economic functions and for assessing the value of damage to natural resources. In the same vein, Onugu, Iwu, Schopp, Czebiniak and Otegbulu (2003), opine that imbalances in the law and practice of environmental valuation are central to the problem faced by communities and ecosystem in the Niger Delta. The researchers are of the opinion that an effective valuation practice could minimize conflict and civil strife arising from inadequate compensation for damage wrought to the sources of food, water and livelihoods of communities throughout the Niger Delta, as well as elsewhere in Nigeria.

According to Egbenta (2010) compensation due as a result of

oil spills has therefore evoked so much problems and controversy in Nigeria in the past to an extent that Valuers have continued to question the relevance and ability of regulatory laws and methods hitherto adopted for its determination. The aim of any compensation is to place the property owner in a position that will make him not to be worse off than before the damage.

Importance of Wetlands

Valuation of wetland resources requires that consideration be given to the various importance attached to them. These are: ecological, socio-cultural and economic (Majule and Mwalyosi, 2003). In other words, wetland ecosystems possess ecological, socio-cultural and economic values that must be adequately accounted for whenever any action that impacts on the system is/would be taken. Each of the importance has its own set of criteria and value-units, which are briefly described, in the following sections.

Ecological Importance of Wetland Services

The ecological importance of wetland ecosystems has been articulated by natural scientists in reference to causal relationships between parts of a

system, for example, the importance of a particular tree species to control erosion or the value of one species to the survival of another species or of an entire ecosystem (Farber, Constanza and Wilson, 2002). At a global scale, different ecosystems and their species play different roles in the maintenance of essential life support processes such as energy conversion, biogeochemical cycling, and evolution (Millennium Ecosystem Assessment, 2003). The magnitude of this ecological value is expressed through indicators such as species diversity, rarity, ecosystem integrity (health), and resilience, which mainly relate to the supporting and regulating services.

Socio-Cultural Importance of Wetland Services

For many people, natural systems, including wetlands, are a crucial source of non-material wellbeing through their influence on physical and mental health, historical, national, ethical, religious, and spiritual values. A particular mountain, forest, or watershed may, for example, have been the site of an important event in the past such as the home or shrine of a deity, the place for moment of moral transformation, or the

embodiment of national ideals. These are some of the values that the Millennium Assessment recognises as the cultural services of ecosystems (Millennium Ecosystem Assessment, 2003). According to Millennium Ecosystem Assessment, (2003), the main types of socio-cultural values include therapeutic value, amenity value, heritage value, spiritual value and existence value. To some extent, these values can be captured by economic valuation methods but to the extent that some ecosystem services are essential to peoples' very identity and existence, they are not fully captured by such techniques. To obtain a certain measure of importance, this may be approximated by using participatory assessment techniques (Campbell and Luckert, 2002) or group valuation (Jacobs 1997; Wilson and Howarth 2002).

Economic Importance of Wetland Services

Economic importance is a measure of what the maximum amount an individual is willing to forego in other goods and services in order to obtain some good, service, or state of the world.

Some authors (Turner, et. al 2003, Seidl, and Moraes, 2000

and Straton, 2006) consider cultural values and their social welfare indicators as a subset of economic values, others state that in practice economic valuation is limited to efficiency and costs-effectiveness analysis, usually measured in monetary units, disregarding the importance of, for example, spiritual values and cultural identity which are in many cases closely related to ecosystem services. In this study, economic and monetary valuation are therefore treated separately from socio-cultural valuation, whereby it is emphasised that ecological, socio-cultural, and economic values all have their separate role in decision making and should therefore, be seen as essentially complementary pieces of information in the decision-making process.

Basis and Methods of Wetland Valuation for Compensation

In assessing the worth of an interest in any property, there are a variety of approaches available to the Estate Surveyor and Valuer. However, the approach chosen is usually a function of a variety of factors such as the purpose of valuation, type of property, basis of valuation etc. In the valuation of land and buildings the methods commonly used include; comparison, income

capitalisation, cost/contractor, profit/account and residual. The adoption of any of these methods requires experience of the Estate Surveyor and Valuer involved with regards to paying attention to neighbourhood and property characteristics. One would have expected that these traditional approaches could be wholly adopted in the valuation of environmental resources such as wetland ecosystem, but literature has shown that the traditional approaches could not capture the true value of wetland resources because environmental (wetland) resources are largely not priced within the normal market that favour the operation of the traditional methods.

Arguing in favour of valuation generally, Blight (2003) describes valuation as a vital element in the efficient functioning of modern economies and of modern society. He further asserts that without accurate valuations, scarce resources may be allocated incorrectly. For an economy and therefore the society to function properly, market participants need to correctly identify the marginal utility of a product such that the correct market price may be established.

The above statement is also true of wetland valuation, because

without proper determination of the value, both the individual and decision/policy makers will continue to underestimate the importance of this God given resource that makes life worth living for man. Estimating the value of wetlands, in monetary terms, dates back to 1926 when Percy Viosca, Jr. estimated the value of fishing, trapping and collecting activities from wetlands in Louisiana at \$20 million annually (Vileisis, 1997). A landmark early valuation study by economists was by Hammack and Brown (1974), who focused on wetlands as waterfowl habitat and estimated the value that wetlands provided in terms of hunting with a contingent valuation method (C.V.M).

Basis of Valuation

Basis of valuation talks about the pillars, the platforms upon which a method rests. It constitutes the bedrock for the choice of method adopted in carrying out any valuation. According to the Royal Institution of Chartered Surveyors (RICS, 2008) a basis of value typically describes the nature of the assumed transaction, the relationship and motivation of the parties and the extent to which the asset is exposed to the market. It

describes the fundamental measurement principles of a valuation. In other words, before a method is adjudged to be appropriate for use in a particular situation, there must be reasons to prefer the method over another with a purpose to achieve certain ultimate goal. In Nigeria, the Nigerian Institution of Estate Surveyors and Valuers (NIESV, 2006) Valuation Standards and Guidance Notes on Property Valuation in section 4.1, recognises two bases of valuation (open market value and depreciated replacement cost). These bases do not totally capture the true value of wetland resources because most of them are not traded in the open market. However, the valuation standards and guidance notes did not make mention of wetland or any environmental resources.

The appropriate basis for valuing wetland (environmental) resources is total economic value (TEV) of wetlands which according to Barbier (1993) and Arin and Siry (2000) is the total amount of resources that individuals would be willing to forgo for increased amount of wetland services. Figs. 1 and 2 show the various groupings of TEV of wetlands.

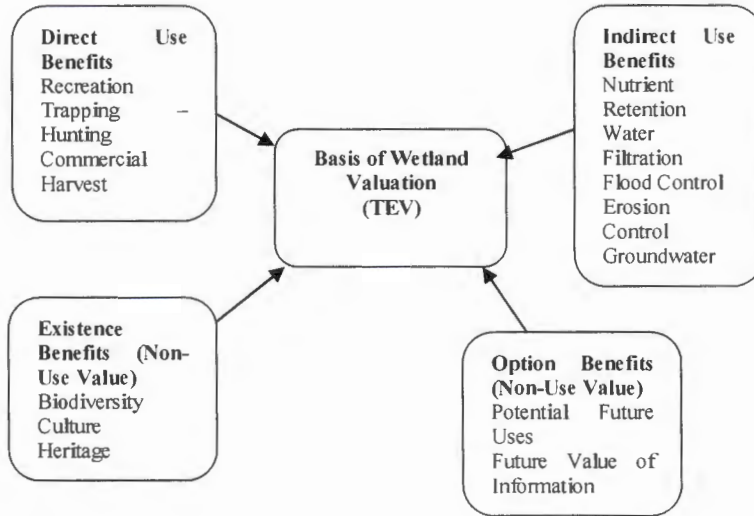


Fig. 1 Basis of Wetland Valuation
Source: Ajibola (2012)

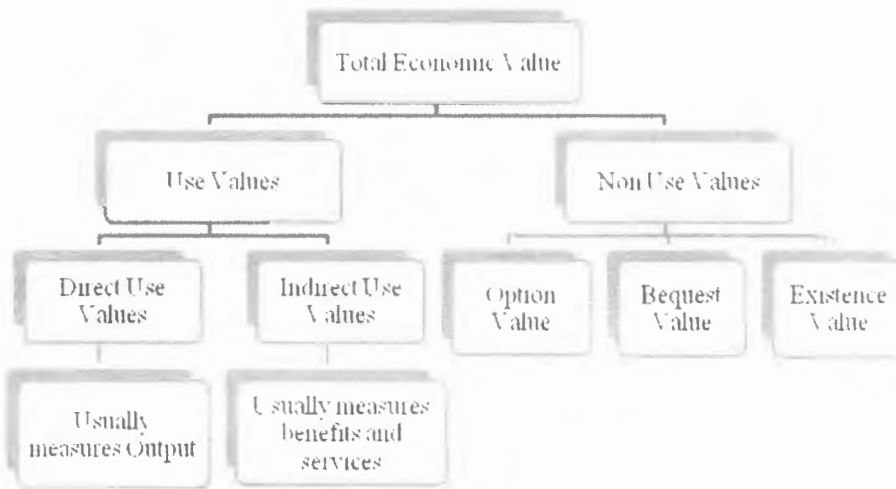


Fig. 2 Components of Total Economic Value
Source: Adapted from Dixon (2008)

Wetland resources are composite in nature producing both use and nonuse resources.

While the use values of wetland resources can be captured, to some extent, using the

traditional methods of valuation, capturing the nonuse values requires the use of other techniques and approaches such as the total economic value (TEV). The TEV framework is based on the presumption that individuals can hold multiple values for ecosystems. It provides a basis for taxonomy of these various values or benefits. The TEV framework is necessary to ensure that all components of value are given recognition in empirical analyses and that “double counting” of values does not occur when multiple valuation methods are employed. It is important to state that the TEV framework does not imply that the “total value” of an ecosystem should be estimated for each policy of concern. TEV framework simply implies that all values that an individual holds for a change of use should be counted. In the simplest form, TEV distinguishes between use values and nonuse values. The use value refers to those values associated with current or future (potential) use of an environmental resource by an individual while nonuse values arise from the continued existence of the resource and are unrelated to use. Typically, use values involve some human “interaction” with the resource

whereas, nonuse values do not.

Methods of Valuation

Wattage (2002) submitted a report to the Centre for the Economics and Management of Aquatic Resources (CEMARE) University of Portsmouth, UK, the Department of Town and Country Planning, University of Moratuwa, Sri Lanka and the Department of Forestry and Environmental Sciences, University of Sri Jayewardenapura, Sri Lanka. The report which was on guidelines on economic valuation of wetland resources using other available non-market valuation methods in Sri Lanka focused on preference elicitation methods (valuation methods) of wetland conservation. The author identifies the following methods for wetland valuation; contingent valuation method, conjoint analysis, travel cost method, hedonic pricing method, production function based techniques and cost-benefit analysis (CBA).

Lambert (2003) identifies nine different methods for valuing wetland resources. The methods include market price method, damage cost avoided, replacement cost or substitute cost method, travel cost method, hedonic pricing method, contingent valuation method,

contingent choice method, benefits transfer method and productivity method. The author also identifies the bases of wetland valuation as direct use values, indirect use values (these are summed up in TEV). In Canada, the Canadian Wildlife Service (2005) examines bases and valuation methods for Great Lake wetlands in Canada's Ontario region. By means of a non-empirical methodology, they drew attention to the failure of the market to reflect the full or true cost of wetland goods and services. They argue that the true bases of valuation for wetland resources should include not just market value but

also direct use benefits, indirect use benefits, option benefits and existence benefits. They suggested contingent valuation and benefits transfer as the appropriate methods for wetland valuation. In a report submitted to the Water Research Commission, on South Africa Wetlands, Turpie, Lannas, Scovronick and Louw (2010) identify three main groups of methods for wetland valuation. According to Ajibola (2012) the approaches to valuing wetland resources can be grouped to market-value approaches, surrogate-market approaches and simulated market approaches (fig. 3).

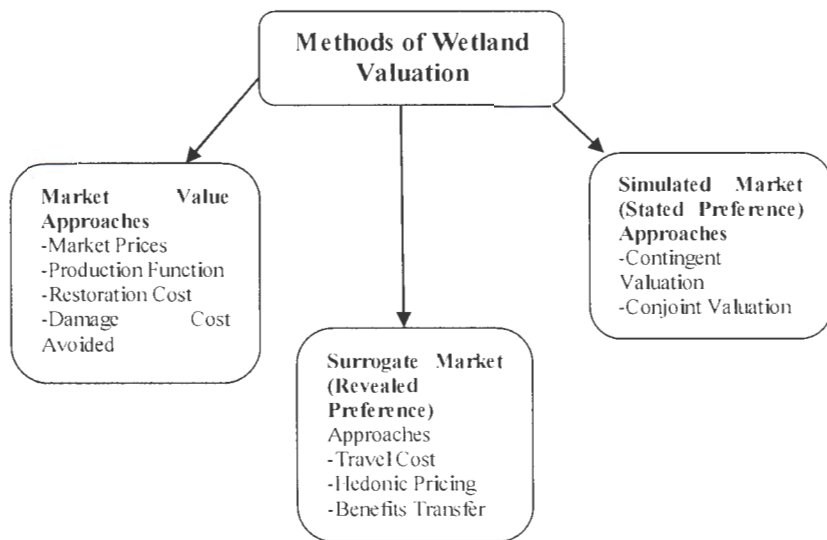


Fig. 3 Methods of Wetland Valuation
 Source: Ajibola (2012)

Market value approaches are valuation techniques based on market data or opportunity costs. They use market sales data or market cost data where such exist, as direct proxies for the value of environmental goods/services. Such methods include market prices, production function, restoration cost and damage cost avoided. Surrogate market (revealed preference) approaches are valuation techniques which use indirect proxies of the value of wetland (environmental) resources. In other words, they use market-based prices and costs, but not to establish value directly; market-based prices and costs are used only to establish a relationship between observed market behaviour and the actual environmental good being valued. Pricing is based on observed behaviour of individuals in respect to related markets. Examples of methods in this category include the hedonic pricing method, the travel time/travel cost method and the benefit transfer method. Simulated market (stated preference) approaches are valuation techniques used where no market based proxy is available. In order to value environmental (wetland) benefits and damages under such circumstances, environmental

valuers often have to simulate markets through research surveys. Simulated market (or „Stated preference“) methods provide the only means of estimating option and non-use values, and have also frequently been applied to the measurement of recreational use value. The methods commonly used are contingent valuation and conjoint valuation (also known as choice modeling or contingent ranking methods).

Literature available to the researcher showed that earlier studies were on methods and other aspects of environmental valuation, not strictly on wetland valuation, not strictly on wetland valuation has been conducted in Nigeria, in general and in Niger Delta in particular. The Nigerian Institution of Estate Surveyors and Valuers annual conference in Port Harcourt in 2005 focused mainly on wetland development. In the course of the conference papers were presented on various aspects of wetland ecosystems. Adegoke (2005) examines wetland loss and degradation, identifies the causes of wetland loss and degradation which he grouped as direct loss and degradation that occurs to the wetland itself, and the indirect loss and degradation which occur as a result of changes outside (upstream) of wetland. He went further to

identify the consequences of wetland loss and degradation which result in the deprivation of humankind of the valuable services of the natural/biological capital stored up in wetlands. It also reduces the ability of wetlands to provide goods and services to support biodiversity. All through the work, the author did not make mention of wetland valuation not to talk of the basis and methods of wetland valuation.

On his own part, Akujuru (2005) identifies the major categories of wetlands to include; Marine, Estuarine, Riverine, Lacustrine and Pauline Systems. He went further to identify the inadequacy of the current (traditional) valuation methods in their application to wetland valuation, since they could not capture the non-use value of wetland ecosystems. In resolving the impasse, he suggests the adoption of Total Economic Value concept, where both use and non-use values of wetland ecosystems are properly captured. However, he did not mention the method(s) appropriate for doing this. Otegbulu (2005) canvassed the adoption of Total Economic Value concept but did not explain the approaches to determining this. It will be near impossible to determine the

Total Economic Value without adopting appropriate method(s) to ascertain, in monetary terms, the loss to the owner or the cost implications of any action, in respect of wetland resources since they are mostly not traded in the open market.

Ijagbemi (2009) opines that the basis of wetland valuation should be total economic value and methods of wetland valuation include the market approach, the direct negotiation method, the open market method, the investment method and the replacement methods (all these are tradition approaches to valuation). He also identified contingent valuation method, which he zeroed in as the approach for assessing oil spills compensation. In his research on the application of contingent method to valuation of non-market goods damaged by oil pollution for compensation, Egbenta (2010), lists other environmental valuation techniques to include travel cost method and hedonic method. He did not examine the basis of valuation.

Materials and Methods

In the conduct of this study, the primary data used was collected by administering questionnaire, and conducting personal and

telephone interviews. Secondary data were sourced from published materials conference papers produced by other researchers. Both descriptive and exploratory approaches were used for the literature review, while an explanatory approach was used in analysing the data collected. Personal/telephone interviews were conducted on the officials of NIESV and Heads of Department of the eleven (11) Universities, in southern Nigeria, offering Estate Management courses, with a view to ascertaining whether environmental valuation is included in their curricula. Questionnaire were administered

on the 120 Estate Surveying and Valuation firms in Bayelsa, Delta and Rivers States (as contained in the lists made available by the NIESV's Branch Secretaries in the three States) out of which 72 (60%) were retrieved and analysed. The primary data collected were collated, analysed and presented using tools such as frequency distributions and percentages and relative importance index (RII).

Results and Discussion

In this section of the study, the data collected was collated, analyzed and discussed in Tables 1 – 10.

Academic Qualification	Frequency	Percentage
OND	1	1.4
HND	11	15.3
B. Sc.	49	68.0
M. Sc.	10	13.9
PhD	1	1.4
Total	72	100.0

Table 1 reveals that 68.0% of the respondents held B. Sc Degree, 15.3% held Higher National Diploma (HND), 1.4% held Ordinary National Diploma (OND) all in Estate Management, while only 13.9% and 1.4% held higher degrees, that is, M.Sc. and PhD respectively. In the past, the fewer number of respondents

with higher degrees might not be unconnected with high demand for Estate Surveyors and Valuers in both State and Federal Ministries, Local Government Council Offices, banks, insurance companies and in other areas of businesses, coupled with good remunerations. However, situation has changed now as

Estate Surveyors and Valuers now find solace in engaging in academic pursuits with job security and good remuneration. An indepth interview conducted among the respondents with higher qualifications indicated that pursuing higher degrees is a recent development, especially

among those who have the focus of going into academic in later years. It can therefore be inferred that majority of the respondents, in the study area, have the required academic qualifications for registering and practicing as Estate Surveyors and Valuers.

Table 2: Respondents' Status in the Firm

Status	Frequency	Percentage
Principal Partner	31	43.1
Managing Partner	15	20.8
Associate Partner	15	20.8
Senior Partner	5	6.9
Senior Surveyor	6	8.4
Total	72	100.0

Table 2 shows that 43.1% of the respondents are Principal Partners, 20.8% are Managing Partners and Associate Partners respectively, Senior Partners (6.9%) and Senior Surveyors (8.4%). Approximately 91.6% of respondents' status is Principal Partner, Managing Partners, Associate Partners or Senior Partners. This is in consonance with the Nigerian mentality in the identity structure among professionals. The variations in the title given to professionals are common among professionals in practice. Within the Estate Surveying and

Valuation profession the choice of Principal, Managing, Associate or Senior Partner depends on the organisational structure of the firm in relation to the number of branches, geographical spread and departmentalisation by each firm. It can be deduced from Table 2 that a larger proportion of the respondents constitute the decision making authority in their respective firms. The reason for high percentage of this category could probably be due to the quest for freedom from control.

Table 3: Respondents’ Involvement in Wetland Valuation Exercises

Wetland Valuation Exercise	Frequency	Percentage
No	17	23.6
Yes	55	76.4
Total	72	100.0

Results as contained in Table 3 show that 76.4% of the respondent Estate Surveyors and Valuers have at one time or the other participated in wetland valuation. This situation is not unexpected since a chunk of the Niger Delta land is made of wetlands and a high proportion of these have either been acquired by multinational oil companies or their activities have resulted in the pollution of wetland ecosystems and

valuation is usually required to determine the compensation payable to the affected people or community as the case may be. The high rate of involvement in wetland valuation by Estate Surveyors and Valuers in the study area could be due to incessant oil spillages and physical development resulting from continuous expansion of companies involved in oil exploration.

Table 4: Environmental Valuation as part of School Curriculum in Higher Institution

Curriculum	Frequency	Percentage
Yes	3	5.5
No	52	94.5
Total	55	100.0

The result as contained in Table 4 shows that only 5.5% of the respondents took any course in environmental valuation during their undergraduate school days. In-depth interviews with respondents who claimed that environmental valuation was part of school curriculum in their higher institutions revealed that they trained in institutions

outside Nigeria. Personal/telephone interviews held with the Heads of Department of Estate Management in Institutions offering Estate Management courses revealed that environmental valuation has been included, as a topic, in the valuation curriculum either or both at M.Sc. and final year undergraduate classes in some

Universities. On the other hand, environmental valuation is being taught as a course, at undergraduate level in only one University. However, it is yet to be so included in the valuation curriculum of other institutions. The interview further revealed that the teaching of environmental valuation is a development that started about five years ago. Also the personal interview conducted on the research department of NIESV

revealed that environmental valuation is yet to be included in the Institution’s curriculum for professional examinations. The import of all this therefore is that Estate Management graduates are yet to be fully armed with adequate training in environmental valuation and by implication, wetland valuation and this may affect their perception and the choice of method used in wetland valuation.

Table 5: Training/Workshop/Seminar on Wetland Valuation between 2005 and 2010

Training/Workshop/Seminar on wetland valuation	Frequency	Percentage
Yes	41	56.9
No	31	43.1
Total	72	100.0

Table 5 shows that 56.9% of the respondents had attended training/workshop/seminar on wetland valuation within the specified period. From the result obtained, it could be inferred that majority of the respondent Estate Surveyors and Valuers (56.9%) in practice within the study area have the knowledge

of wetland ecosystems. This could be attributable to the conferences organised by the Nigerian Institution of Estate Surveyors and Valuers in Port Harcourt (2005) and Warri (2007) where issues relating to aspects of wetland as a natural resource were discussed.

Table 6: Number of Training/Workshop/Seminar attended between 2005 and 2010

	Frequency	Percentage
Less than 5	41	56.9
5 – 10	0	0.0
Above 10	0	0.0
None	31	43.1
Total	72	100.0

Table 6 reveals that all the respondents (56.9%) who claimed to have attended training/workshop/seminar had actually attended less than five of such training/ workshop/ seminar within the specified period. The reason for this could be traced to the few number of training/workshop/seminar on wetland valuation organised by

NIESV and ESVARBON, coupled with the fact that such training/workshop/seminar were not mandatory. It could be inferred from the table that Estate Surveyors and Valuers in the study area have had limited training on wetland valuation and this will impact on their perception and valuation of wetland resources.

Table 7: Basis of Wetland Valuation for Compensation

Basis	Frequency	Percentage
Open Market	34	61.8
Cost	18	32.7
Total Economic Value	3	5.5
Total	55	100.0

Table 7 shows that 61.8% of the respondent Estate Surveyors and Valuers in the Niger Delta adopted open market basis for wetland valuation. This was followed by the adoption of cost basis (32.7%) and total economic value basis (5.5%). Table 7 clearly shows that the respondents' basis of valuation ignored those aspects of wetland ecosystems that are not traded in the open market. The adoption of both open market and cost bases for wetland valuation could be due to Estate Surveyors and Valuers familiarity with the two bases which have their application rooted in the use of

market data. It could also be as a result of provision for the two bases in the valuation standards and guidance notes of the Nigerian Institution of Estate Surveyors and Valuers as the only bases for valuation. It could therefore be deduced that Estate Surveyors and Valuers are not very familiar with the total economic value basis of wetland valuation since majority of them did not have any training on environmental valuation. The adoption of the two bases could equally be due to non provision of the laws for non use aspects of wetland ecosystems.

Table 8: Use of Traditional Methods in Wetland Valuation for Compensation

Method	Responses	
	No	Yes
Comparison	32 (58.2%)	23 (41.8%)
Income Capitalisation	33 (60.0%)	22 (40.0%)
Cost/Contractor	40 (72.7%)	15 (27.3%)
Profit/Account	55 (100.0%)	0 (0.0%)
Residual	55 (100.0%)	0 (0.0%)

Table 8 reveals that only three of the traditional methods were adopted by Valuers in wetland valuation. About forty-two percent (41.8%) adopted comparison, 40.0% adopted income capitalisation and 27.3% adopted cost/contractor. The greater frequency of usage of the

three methods might probably be as a result of what respondents valued within wetland locations. The reason for the adoption of traditional methods could also be due to the method specified for compensation valuation in the Land Use Act of 1978.

Table 9: Contemporary Methods in Wetland Valuation for Compensation

Method	Responses	
	No	Yes
Replacement Cost	22 (40.0%)	33 (60.0%)
Hedonic Pricing	25 (45.5%)	30 (54.5%)
Travel Costs	44 (80.0%)	11 (20.0%)
Production Function	27 (49.1%)	28 (50.9%)
Market Prices	19 (34.5%)	36 (65.5%)
Benefits Transfer	47 (85.5%)	8 (14.5%)
Contingent Valuation	43 (78.2%)	12 (21.8%)
Cost-Benefit Analysis (Trade-off Analysis)	22 (40.0%)	33 (60.0%)
Participatory Approach	55 (100.0%)	0 (0.0%)

Table 9 contains the contemporary methods of valuing wetland resources. Apart from participatory method, other methods were adopted by the respondents in valuing wetland resources. These methods include market prices (65.5%),

replacement cost (60.0%) cost-benefit analysis (60.0%), hedonic pricing (54.5%) and production function (50.9%). Other methods adopted by the respondents are contingent valuation (21.8%), travel costs (20.0%) and benefits transfer

(14.5%). It could be observed that all the methods with high level of usage capture values based on the interplay of market forces. On the other hand the lower usage of methods like

contingent valuation, travel costs and benefits transfer might be due to the fact that the respondents had no formal training in environmental valuation.

Table 10: Ranking of Contemporary Methods in Wetland Valuation for Compensation

Methods	5	4	3	2	1	Total	RII	Ranking
Replacement Cost	16 a _i n _i = 80	11 a _i n _i = 44	4 a _i n _i = 12	6 a _i n _i = 12	18 a _i n _i = 18	55 166	3.02	2 nd
Hedonic Pricing	9 a _i n _i = 45	16 a _i n _i = 64	6 a _i n _i = 18	7 a _i n _i = 14	17 a _i n _i = 17	55 158	2.87	4 th
Travel Costs	1 a _i n _i = 5	2 a _i n _i = 8	14 a _i n _i = 42	18 a _i n _i = 36	20 a _i n _i = 20	55 111	2.02	7 th
Production Function	9 a _i n _i = 45	13 a _i n _i = 52	9 a _i n _i = 27	6 a _i n _i = 12	18 a _i n _i = 18	55 154	2.80	5 th
Market Prices	17 a _i n _i = 85	14 a _i n _i = 56	2 a _i n _i = 6	4 a _i n _i = 8	18 a _i n _i = 18	55 173	3.15	1 st
Benefits Transfer	0 a _i n _i = 0	3 a _i n _i = 12	7 a _i n _i = 21	5 a _i n _i = 10	40 a _i n _i = 40	55 83	1.50	8 th
Contingent Valuation	0 a _i n _i = 0	12 a _i n _i = 48	13 a _i n _i = 39	15 a _i n _i = 30	15 a _i n _i = 15	55 132	2.40	6 th
Cost-Benefit Analysis (Trade-Off Analysis)	8 a _i n _i = 40	21 a _i n _i = 84	6 a _i n _i = 18	1 a _i n _i = 2	19 a _i n _i = 19	55 163	2.96	3 rd
Participatory Approach	0 a _i n _i = 0	0 a _i n _i = 0	2 a _i n _i = 6	6 a _i n _i = 12	47 a _i n _i = 47	55 65	1.18	9 th

Table 10 shows respondents ranking of wetland valuation methods in order of usage. The Table reveals that market prices method was ranked as having the highest level of usage with RII of 3.15. This was closely followed by replacement cost method, with RII of 3.02 coming in second position. Other methods ranked in order of frequency of usage are cost-benefit analysis (RII = 2.96),

hedonic pricing method (RII = 2.87) and production function (RII = 2.80). Comparing Tables 9 and 10 it is evident that these five methods were commonly adopted by Valuers when valuing wetland ecosystems. This is not unexpected because all these methods wholly rely on market evidence with which the Valuers are conversant, as earlier established in Table 9. Though the adoption of

contingent valuation method (ranked 6th) presupposes the assessment of both use and non-use components (values) of wetland ecosystems, it could be inferred that only the marketable components of wetland resources were assessed by respondent Estate Surveyors and Valuers.

Conclusion and Recommendations

Considering the basis and methods of wetland valuation for compensation purpose in the study area, the study revealed that majority of the Estate Surveyors and Valuers, in the Niger Delta adopted open market (61.8%) and cost (32.7%) bases for wetland valuation. Only a small proportion (5.5%) of the respondents adopted total economic value basis which take cognisance of non-use value aspects of wetland ecosystems that are not traded in the open market. The study showed that traditional methods cannot be wholly applied for the valuation of wetland ecosystems as such methods cannot be adopted in the valuation of attributes, functions and services which are not traded in the open market.

The study showed that of the nine methods available for

wetland valuation, market prices method was ranked as having the highest level of usage (RII = 3.15) followed by replacement cost method (RII = 3.03), cost-benefit analysis (RII = 2.96), hedonic pricing method (RII = 2.87) and production function (RII = 2.80). In other words, the study revealed that respondents in the study area adopted methods that rely more on market evidence for capturing ecosystems values. From the preponderance of the adoption of market based methods, it could be concluded that only the marketable components of wetland resources were assessed by respondent Estate Surveyors and Valuers.

The study further revealed that only 5.5% of the respondents took any course in environmental valuation during their undergraduate school days. Also environmental valuation has not been included in NIESV Professional valuation curriculum. About 43.1% of respondent Estate Surveyors and Valuers claimed they had never attended any training/workshop/seminar on wetland valuation. In depth interview conducted on Heads of Department of the universities offering Estate Management courses in the Southern part of the country showed that the

Table 8: Use of Traditional Methods in Wetland Valuation for Compensation

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Estate Surveyors and Valuers are advised to adopt the total economic value basis for wetland valuation as against open market value and cost bases that capture only the use value components of wetland ecosystems. Since traditional methods had been found not to fully capture the true value of wetland resources, there is need for practicing Estate Surveyors and Valuers to adopt the contemporary methods, especially the contingent valuation method, that capture both the use and non-use values of wetland resources.

NIESV should include environmental valuation in the curriculum for professional examinations (training). In addition, NIESV should organise mandatory training/workshop/ seminar on wetland valuation and similar topical issues as they may arise from

time to time to keep members up-to-date with the appropriate techniques available. Also, ESVARBON should mandate Institutions offering Estate Management courses to include environmental valuation as a Course, rather than treating it as a topic, as is currently done in majority of the universities. This is to ensure a detailed coverage of the various aspects of environmental valuation. Also NIESV and ESVARBON should begin to think about specialisation in the field of valuation. The two bodies should make regular attendance and participation at professional trainings a condition for annual renewal of membership and seal. In addition, the Valuation Standards and Guidance Notes should be reviewed with a view to including total economic value as one of the bases of valuation and also include the identified environmental valuation methods as these will make adequate provision for proper valuation of wetland and other environmental resources.

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