

## CHALLENGES OF VALUING WETLAND RESOURCES FOR COMPENSATION IN THE NIGER DELTA, NIGERIA

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### **Abstract:**

The concern for wetland valuation is the determination of appropriate compensation payable to the affected claimants. In the conduct of wetland valuation, the Estate Surveyor and Valuer is faced with a myriad of challenges and this study therefore examines the challenges involved in the conduct of wetland valuation exercise in the study area. Questionnaire, personal and telephone interviews were employed in collecting the primary data used for this study. A total of 72 questionnaire was retrieved and used for the study. The data collected was analysed and presented using frequency distributions and percentages and relative importance index (RII). The study revealed that valuing wetland resources is fraught with challenges such as lack of data (87.3%, RII = 3.84), complex wetland ecosystems (80.0%, RII = 3.75), inadequate government policy (69.1%, RII of 3.29), sophisticated survey design (63.6%, RII = 2.35) and hostility from residents within and around wetlands (32.7%, RII = 2.36). The study therefore recommends collaboration between the professional body and government to provide data bank for the valuation of wetland resources, federal government to formulate policy for wetland use and management, compelling the multinational oil companies to adopt contemporary (environmental) valuation methods in the determination of compensation payable to claimants. Estate Surveyors and Valuers Registration Board of Nigeria (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.

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**Keywords:** Claimants, Environmental Valuation, Hostility, Niger Delta, Wetlands

## **Introduction**

Though it is difficult to value wetland functions, as there is no direct demand for them, it is plausible to value their corresponding goods and services. Ascribing value to something abstract, as wetland ecosystems could be a difficult task especially because of the complexity of the ecosystem and the requirement for multi-disciplinary services in the determination of its various components.

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.

In the valuation of real asset, the Estate Surveyor and Valuer is confronted with various challenges which over the years had been discussed in various literature. However, putting value on something abstract such as wetlands is fraught with more challenge taking cognisance of the fact that environmental valuation, in Nigeria, is at its infant stage. Therefore this study examines the challenges that the Estate Surveyors and Valuers are faced with in the conduct of wetland valuation exercise in the study area.

## **The Need for Valuation**

Wetlands are recognised as valuable ecosystems which provide water, food and raw materials, services such as flood attenuation and water purification, and intangible values such as cultural and religious value. In some areas, they can be particularly important for peoples' livelihoods. Despite this, and legislation to protect them, they are increasingly threatened, with more than half of the world's wetlands being lost already. Wetlands are degraded beyond the socially optimal extent due to market failure since markets do not reflect

true values or costs) and government failure (perverse incentives, lack of well-defined property rights leading to open access and ignorance of decision makers as to the value of wetlands.

Given the complex structure and functioning of aquatic and related terrestrial ecosystems, these systems often yield a vast array of continually changing goods and services. The quality and quantity of these services are in turn affected by changes to ecosystem structure and functioning. Thus, alternative policy and management options can have major implications on the supply of aquatic ecosystem services, and it is the task of economic valuation to provide estimates to decision-makers of the aggregate value of gains or losses arising from each policy alternative.

Barbier, Acreman and Knowler (1997) were of the view that a major reason for excessive depletion and conversion of wetland resources is often the failure to account adequately for their non-market environmental values in development decisions. They posit that by providing a means for measuring and comparing the various benefits of wetlands, economic valuation can be a powerful tool to aid and improve wise use and management of global wetland resources. They stated further that valuation attempts to assign quantitative values to the goods and services provided by environmental (wetland) resources, whether or not market prices are available to assist in the assessment of the value.

Valuation is important because services provided by aquatic ecosystems have attributes of public goods. Public goods are non-rival and non-excludable in consumption, thus preventing markets from efficiently operating to allocate the services e.g. wetland filtration of groundwater. As long as the quantity of groundwater is not limited, everyone who has a well in the area can enjoy the benefits of unlimited potable groundwater. However, in the absence of any market for the provision of water through wetland filtration, then there would be no observed price to reveal how much each household or individual may be willing to pay for the benefits of such a service. Although everyone is free to use the aquifer, yet no one is responsible for protecting it from contamination. However, non-market values can be estimated to assess whether the benefits of collective action—perhaps through a state environmental agency or the Federal Environmental Protection Agency (FEPA), exceed the cost of the proposed actions to protect the wetland, and consequently the wetland filtration process and the quality of the water in the aquifer for drinking purposes.

Some aquatic ecosystem services indirectly contribute to other services that are provided through a market but the value of this ecological service itself is not traded or exchanged in a market. For example, an estuarine marshland may provide an important

“input” into a commercial coastal fishery by serving as the breeding ground and nursery habitat for fry (juvenile fish). Although disruption or conversion of marshland may affect the biological productivity of the marsh and thus, its commercial fishery, a market does not exist for the commercial fishery to pay to maintain the habitat service of the marshland. The problem is also one of transaction costs. It is costly for participants in the commercial fishery to come together and negotiate with marshland owners and there may be many owners from whom protection agreements must be sought. Estimation of the implicit (non-market) value of the fishery of marsh habitat can be used to understand whether there are laws and rules that protect the breeding and nursery functions of the marsh.

Aquatic ecosystem services that do not have market prices are excluded from explicit consideration in cost-benefit analyses and other economic assessments, and are therefore likely not to get full consideration in policy decisions. Valuation helps to compare the real costs and benefits of ecosystem use and degradation, and allows more balanced decision-making regarding the protection and restoration versus degradation of wetlands. This facilitates optimal decision-making which maximises societal well-being. If monetary values of ecosystem services are not estimated, many of the major benefits of aquatic ecosystems will be excluded in benefit-cost computations. The likely outcome of such an omission would be too little protection for aquatic ecosystems and as a consequence, the services that people directly and indirectly enjoy would be undersupplied. Valuation, therefore, can help to ensure that ecosystem services that are not traded in markets and do not have market prices receive explicit treatment in economic assessments. The goal is not to create values for aquatic ecosystems; rather, the purpose of valuation is to formally estimate the “non-market” values that people already hold with respect to aquatic ecosystems. Such information on non-market values will in turn assist in assessing whether or not to protect certain types of aquatic ecosystems enhance the provision of selected ecosystem services and/or restore damaged ecosystems. Finally, economic values are often used in litigation involving damage to aquatic ecosystems from pollution or other human actions. According to Barbier, Acreman and Knowler, (1997) wetland valuation is used to build local and political support for its conservation and sustainable use, help diagnose the causes of environmental degradation and biodiversity loss, allow more balanced planning and decision-making, and/or develop incentive and financing mechanisms for achieving conservation goals.

## Wetland Services

The overall economic value of a wetland is derived from the values associated with the services it is expected to provide overtime. Wetland services can include any outcome that contributes to a generally accepted measure of human welfare, including recreational and educational opportunities, aesthetic, spiritual enrichment, and market-based goods and services. The services provided by wetlands include beneficial outcomes associated with biodiversity support, carbon sequestration, and water filtration (King, Wainger, Bartoldus, and Wakeley, 2000). While some services associated with functions, (biodiversity support or carbon sequestration) are not site dependent (i.e. does not depend on the location of the wetland) others such as those related to aesthetics and educational/recreational opportunities are highly site dependent.

For the purposes of valuing wetland, it is useful to consider wetlands as “factories” of beneficial services. The capacity of wetland to provide these services is partially derived from its level of function and partially from location-specific.

Millennium Ecosystem Assessment (2005) identifies the underlisted services provided by or derived from wetlands, putting them under four main categories as contained in Table 1

Table 1. Ecosystem Services provided by or derived from Wetlands

	Wetlands Services	Benefits to Human well-being
<b>Provisioning</b>	Food	Production of fish, wild game, fruits and grains
	Fresh Water	Storage and retention of water for domestic, industrial and agricultural use
	Fiber and fuel	Production of logs, fuelwood, peat, fodder
	Biochemical	Extraction of medicines and other materials from biota
	Genetic Materials	Genes for resistance to plant pathogens; ornamental species, etc.
<b>Regulating</b>	Climate regulation	Source of and sink for greenhouse gases; influence local and regional temperature, precipitation and other climatic processes
	Water regulation (Hydrological flows)	Ground water recharge/discharge

	Water purification and waste treatment	Retention, recovery, and removal of excess nutrients and other pollutants
	Erosion regulation	Retention of soils and sediments
	Natural hazard regulation	Flood control, storm protection
	Pollination	Habitat for pollinators
<b><i>Cultural</i></b>	Spiritual and inspirational	Source of inspiration; many religions attach spiritual and religious values to aspects of wetland ecosystems
	Recreational	Opportunities for recreational activities
	Aesthetic	Many people find beauty or aesthetic value in aspects of wetland ecosystem
	Educational	Opportunities for formal and informal education and training
<b><i>Supporting</i></b>	Soil formation	Sediment retention and accumulation of organic matter
	Nutrient cycling	Storage, recycling, and acquisition of nutrients

*Source:* Adapted from Millennium Ecosystem Assessment (2005)

### **Challenges Faced in Wetland Valuation**

Wetland is a complex natural resource. Its value assessment requires a team of multidisciplinary professionals (biologists, economists, land surveyors, estate surveyors, etc). As a result of its complexity, valuing wetland resources is fraught with a lot of challenges. King (1998) using non-empirical approach identifies three challenges the wetland valuers may have to contend with. The first problem is that of political institutions, without enormous pressure to the contrary; treat no-value as zero value estimates. The second problem is that popular “scientific” literature is becoming littered with estimates of wetland values that are misleading and unsound, but are being used. The third problem is that professional economists may never be willing to throw in the towel on wetland valuation. The author concluded that the results from conventional economic studies of wetland values have been so frustrating and disappointing for wetland protection. On their own part, the Canadian Wildlife Service (2005) identifies the challenges facing wetland valuation to include among

others: lack of data, sophisticated survey design, complexity of wetland ecosystem, people's awareness and policy issues.

Lambert (2003) views the challenges of wetland valuation to include; market imperfections, government policy, people's awareness, biases, differences in wetland sites and limitation to the application of the methods. He went further to explain that market imperfections (subsidies, lack of transparency) and policy distort the market price. If people are not aware of the link between the environmental attribute and the benefits to themselves, the value will not be reflected in the price. There are various sources of possible bias in the interview techniques. Extrapolation can only be done for sites with the same gross characteristics. The methodology is straightforward and data requirements are limited but the method only works for some goods or services.

In a paper presented at the joint seminar on compulsory purchase and compensation on land acquisition and takings, Adamowicz and Boxall (2007) list six major challenges facing wetland valuation. They include: capturing complex ecological – economic relationships associated with ecosystem services; passive use values; scale of analysis; are values of wetlands (and wetland services) increasing over time?, irreversibility of wetland service provision/thresholds; primary data versus benefits transfers and targeting – do we know enough to target areas with high benefits relative to costs?

In the report of Turpie, et al. (2010), the authors conclude that there are five major challenges in the valuation of wetlands in South Africa. The challenges are public good qualities of wetland resources, externalities, perverse incentives, lack of clear property rights and lack of information.

Ijagbemi (2009) was of the opinion that the challenges encountered in carrying out wetland valuation are the items of valuation – heads of claim – cannot be exchanged in the open market; non-availability of data for wetland resources and that most of the properties involved are not income yielding or offered in the market. After a comprehensive review of the various statutory provisions for compensation, Egbenta (2010) concludes that inadequacy of legal regulations is a major challenge frustrating wetland valuation. He is of the view that there is no comprehensive statutory provision for assessing compensation resulting from oil spills/pollution in the petroleum industry.

The various challenges an Estate Surveyor and Valuer may be faced with in the valuation of wetland resources, in the Niger Delta, Nigeria are as shown in Fig 1.

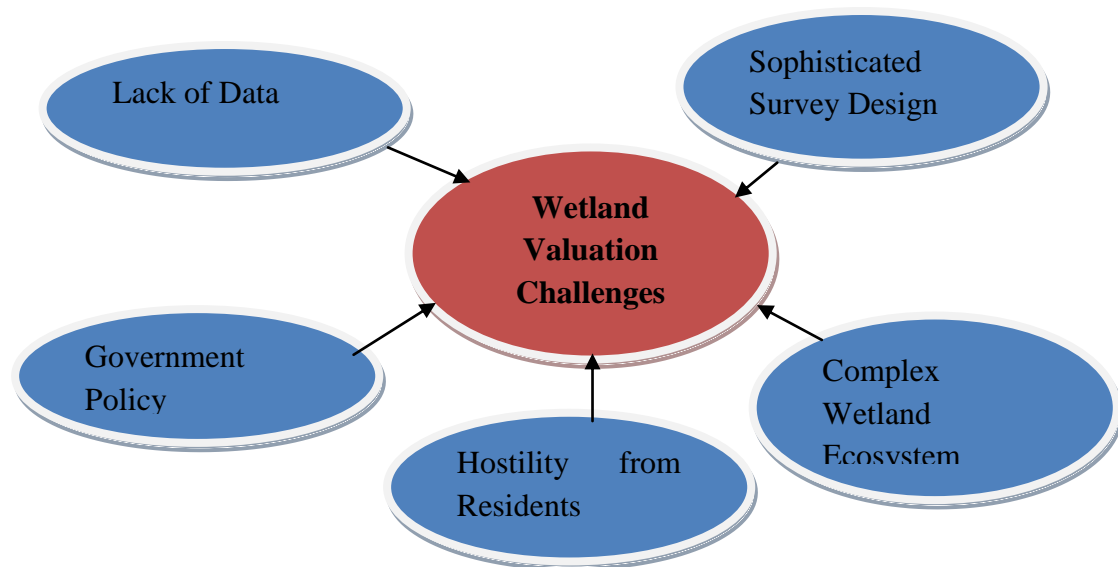


Fig. 1 Challenges of Wetland Valuation

Source: Ajibola (2012)

Various challenges faced in conducting wetland valuation were sieved from literature however figure 1 contains those ones conceptualised by the author. These are lack of data, sophisticated survey design, complex wetland ecosystem, hostility from residents and government policy. Just like the general valuation, wetland valuation depends on the availability and accessibility to current and relevant data. This is very important bearing in mind that wetland is a complex ecosystem requiring the input of various professionals. Most of the methods used in wetland valuation require complex and sophisticated survey instrument that wetland Valuers should be conversant with else the valuation may not produce the expected result. Government policy in terms of the legislation and statement about handling and management of wetland ecosystem is of importance. Without adequate legislation, there is no doubt; human action will continue to degrade wetland. Hostility due to agitation over inadequate compensation in the Niger Delta has been on the increase and this constituted a great challenge towards wetland valuation in the area. This has however impacted on the procedures adopted in wetland valuation and the methods used for such assignment.

### Materials and Methods

The primary data used for this study was collected using questionnaire, personal and telephone interviews; while secondary data was collected using materials produced by other authors/researchers. Both descriptive and exploratory approaches were used for literature review, while explanatory approach was used in analysing the data collected. Furthermore,



interview was conducted on the village heads to elicit information on the cause of hostility from the villagers. Finally, the researcher extended his work to include the NIESV with a view to ascertaining the inclusion of environmental valuation in the curriculum for professional examinations. Questionnaire was 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%) was retrieved and used for the study. Personal/telephone interviews were conducted on Heads of Department of all the Universities offering Estate Management in the Southern part of Nigeria. The primary data collected was analysed and presented using tools such as frequency distributions and percentages and relative importance index (RII).

### Results and Discussion

In this section, the data collected were collated, analysed and the results are as presented in Tables 2 – 7 followed by the discussions.

Table 2. Respondents' Academic Qualifications

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
<b>Total</b>	<b>72</b>	<b>100.0</b>

Table 2 reveals that 68.0% of the respondents held B. Sc, 15.3% held HND, 1.4% held OND all in Estate Management, while only 13.9% and 1.4% respectively held higher degrees, that is, M.Sc. or PhD. 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, in those days. Situation has changed and Estate Surveyors and Valuers now find solace in engaging in academic 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 3. Respondents' Status in the Firm**

<b>Status</b>	<b>Frequency</b>	<b>Percentage</b>
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
<b>Total</b>	<b>72</b>	<b>100.0</b>

Table 3 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 are 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 3 that a larger proportion of the respondents constitute the decision making authority in their respective firms.

**Table 4. Involvement in Wetland Valuation Exercises**

<b>Wetland Valuation Exercise</b>	<b>Frequency</b>	<b>Percentage</b>
No	17	23.6
Yes	55	76.4
<b>Total</b>	<b>72</b>	<b>100.0</b>

Results as contained in Table 4 show that majority of the respondent Estate Surveyors and Valuers (76.4%) 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 (76.4%) of participation 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 5. Environmental Valuation as part of School Curriculum in Higher Institution**

<b>Curriculum</b>	<b>Frequency</b>	<b>Percentage</b>
Yes	3	5.5
No	52	94.5
<b>Total</b>	<b>55</b>	<b>100.0</b>

The result as contained in Table 5 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 and 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 for 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 the above 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 6. Challenges Encountered in Valuing Wetland Resources for Compensation**

Challenges	Responses	
	No	Yes
Lack of Data	7 (12.7%)	48 (87.3%)
Complex Wetland Ecosystems	11 (20.0%)	44 (80.0%)
Sophisticated Survey Design	20 (36.4%)	35 (63.6%)
Inadequate Government Policy	17 (30.9%)	38 (69.1%)
Hostility from Residents within and around Wetlands	37 (67.3%)	18 (32.7%)

Table 6 shows that major challenges faced by respondents, in the conduct of wetland valuation are lack of data (87.3%), complex wetland ecosystems (80.0%), inadequate government policy (69.1%) and sophisticated survey design (63.6%). Lack of data is a common challenge with the valuation of assets using market supported approaches. Wetland is made up of complex ecosystem that at times makes identification near impossible. The services/functions and the attributes are not easily assessable using the market based approaches that Estate Surveyors and Valuers are familiar with. Various government policies on compensation due to affected persons/communities have not helped situation since they do not make provision for compensation for non-use wetland resources.

Indepth interviews conducted on village heads revealed that hostility among the villagers was due to prolong agitation over inadequate compensation and impropriety in the Niger Delta region. Further interview revealed that hostility by residents arise due to claimants' perception of connivance among the community heads, Estate Surveyors and Valuers and the oil companies. While individual claimants prefer direct and personal representation, they see the community heads as the ones determining what comes down to them as pittance and this does not go down well with them. Though hostility has a relatively small effect (31.9%) it is very important to consider it seriously in wetland valuation as its effect may result in the adoption of wrong process and method of valuation which may culminate into inadequate compensation figure(s). The inference therefore, is that the choice

of methods and the approaches used by respondents in carrying out wetland valuation were actually constrained by a series of factors.

**Table 7. Ranking the Challenges Encountered in Valuing Wetland Resources for Compensation**

Challenges	5	4	3	2	1	Total	RII	Ranking
Lack of Data	29 $a_i n_i =$ 145	6 $a_i n_i$ = 24	10 $a_i n_i$ = 30	2 $a_i n_i$ = 4	8 $a_i n_i$ = 8	55 211	3.8 4	1 <sup>st</sup>
Complex Wetland Ecosystem	28 $a_i n_i =$ 140	11 $a_i n_i$ = 44	3 $a_i n_i$ = 9	0 $a_i n_i$ = 0	13 $a_i n_i$ = 13	55 206	3.7 5	2 <sup>nd</sup>
Sophisticated Survey Design	2 $a_i n_i =$ 10	12 $a_i n_i$ = 48	9 $a_i n_i$ = 27	12 $a_i n_i$ = 24	20 $a_i n_i$ = 20	55 129	2.3 5	5 <sup>th</sup>
Inadequate Government Policy	13 $a_i n_i =$ 65	15 $a_i n_i$ = 60	13 $a_i n_i$ = 39	3 $a_i n_i$ = 6	11 $a_i n_i$ = 11	55 181	3.2 9	3 <sup>rd</sup>
Hostility from Residents within and around wetlands	3 $a_i n_i =$ 15	13 $a_i n_i$ = 52	8 $a_i n_i$ = 24	8 $a_i n_i$ = 16	23 $a_i n_i$ = 23	55 130	2.3 6	4 <sup>th</sup>

Table 7 reveals that respondents were of the opinion that lack of data (RII = 3.84), complex wetland ecosystem (RII = 3.75) and inadequate government policy (RII = 3.29) constituted greatest challenges facing wetland valuation in the study area. Hostility from residents around wetlands (RII = 2.36) and sophisticated survey design (RII = 2.35) were ranked fourth and fifth respectively. The ranking of lack of data as number one could emanate from the general understanding that the valuation outcome is as good as the data used for the assignment. On the other hand, ranking complex wetland ecosystem second could be due to the fact that generally wetland ecosystem is made of various components that at times require the inputs of diverse professionals before a valuation assignment could be successfully carried out.

## Conclusion and Recommendations

The study revealed that valuing wetland resources in the study area is fraught with various challenges such as lack of data (87.3%, RII = 3.84), complex wetland ecosystems (80.0%, RII = 3.75), inadequate government policy (69.1%, RII of 3.29), sophisticated survey design (63.6%, RII = 2.35) and hostility from residents within and around wetlands (32.7%, RII = 2.36).

The study showed 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. 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 teachings on environmental valuation, generally, is a recent development and is yet to cut across all Universities offering Estate Management courses. The interview further revealed that while graduates from some institutions already have an understanding of environmental valuation, those from other institutions are yet to have any understanding of environmental valuation and this may affect their perception of wetland resources and eventually the choice of method(s) for their valuation.

Lack of data (87.3%, RII = 3.84) was identified as a great challenge facing wetland valuation in the study area. Since difficulties in accessing relevant data (from the public domain and from governmental agencies) and the paucity of data on wetland valuation in the region may significantly impinge on the process of choosing valuation methods, there is need for collaboration between the professional body and government to provide data bank for the valuation of environmental (wetland) resources. Also, inadequate government policy (69.4%, RII = 3.29) was identified and ranked third among the challenges encountered in valuing wetland resources. Therefore, there is urgent need for the Federal Government to formulate a clear cut policy for wetland use and management. Such policies should include wetland conservation and management. This could also include policies compelling the multinational oil companies adopting contemporary (environmental) valuation methods in the determination of the compensation payable to the claimants.

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.

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