

AN EXAMINATION OF ESTATE SURVEYORS AND VALUERS' PERCEPTION OF FLOOD RISK ON RESIDENTIAL PROPERTY VALUE IN LAGOS STATE, NIGERIA

*OLOKE, O.C.,¹ AYEDUN, C.A.¹ and IGNATUS, O.²

<http://dx.doi.org/10.4314/ejesm.v6i6.9S>

Received 30th July 2013; accepted 27th November 2013

Abstract

The increasing incidence of flooding across the globe in recent times and the attendant devastating impact has heightened anxiety among the people, investors, investment advisers, policy makers and prompted media attention. Recent research efforts have focused on the assessment of the impacts on people, environments, activities, future implications and mechanisms of arresting the menace. This study contributes to this body of knowledge by examining the perception of valuation experts on flood risk on residential property value in Lagos State. Questionnaires are administered to qualified estate surveyors and valuers from 78 Estate Surveying and Valuation Firms across Lagos State. Data were analysed with tables, percentages, 4-point Likert scale and mean ranking (RII). Result shows that majority of the valuation experts admits that the incidence of flooding is on the rise but differ significantly on the impact on property value. The study further reveals that there is no particular approach to flood risk analysis commonly adopted by the valuation experts. The study therefore suggests that since there are risks and impact differentials, approach to flood risk analysis should take into consideration the location and neighbourhood peculiarities with respect to the source(s) and nature of flood risks. This would assist in providing a more objective and reliable estimates of flood impact on residential property value.

Key words: Estate Surveyors, Perception, Flood risk, Residential Property, Value, Flooding

Introduction

Average global temperatures have increased by 0.7°C over the past century and are now rising by 0.2°C a decade (IPCC, 2007). The report further noted that only 5°C was the average change in global temperatures required to move the Earth from an ice age to the climate of the 20th century. The impact of the current temperature rise/global warming has manifested in changes in weather patterns and such changes and related impacts have added a new dimension of risk for the property sector (LaSalle, 2010). With each passing year, threats of global warming and associated climate changes have attained increasing public attention. The impacts on the financial service sector (banking, insurance, etc.) have been discussed by individual firms for over 25 years (Munich, 1973) and in official international science and public policy circles since at least 1995 (Dlugolecki *et al.*, 1996). Past experience is not a reliable proxy for the patterns

of natural disaster under future climate (Sarewitz *et al.*, 2000) and therefore, whether as a result of human-induced or natural forces, investors, policy makers and other stakeholders are confronted with the need to better prepare, predict and withstand the rising tempo of natural disaster and losses arising thereof.

Flooding, being one of the most frequent and widespread of all environmental natural hazards occurs in most terrestrial portions of the globe, causing huge annual losses in terms of damage and disruption to livelihoods, businesses, infrastructure, services and public health (Olorunfemi, 2011). Askew, (1999) in Etuonovbe (2011) affirmed that floods have posed tremendous danger to people's lives and properties across the globe and are responsible for about one third of all deaths, one third of all injuries and one third of all damage from natural disasters. The International Federation of Red Cross and Red Crescent Societies observed that

¹Department of Estate Management, College of Science and Technology, Covenant University, Ota, Ogun State.

²Department of Building Technology, College of Science and Technology, Covenant University, Ota, Ogun State.

*Corresponding author: c_yinkaoloke@yahoo.com

between 1993 and 2002, flood disasters “affected more people across the globe (140 million per year on average) than all the other natural or technological disasters put together” (IFRC, 2003). Similarly, studies by Few *et al* (2004); UNFCCC (2008) have also shown that as a result of global warming, the climate in Africa and Asia is predicted to become more variable, and extreme weather events are expected to be more frequent and severe, with increasing risk to health and life. This includes increasing risk of drought and flooding in new areas.

According to CRED 2005 (in Sagala, 2006), flood has been a dominant natural hazard in terms of events for recent years in South East Asian countries while ActionAid International, (2006) noted that in Africa, climate change have aggravated urban flooding and have forced many rural people to migrate to town and cities, adding large new populations to existing slum communities. A review of climate change impacts on urbanization by the International Institute of Environment and Development (Huq *et al.*, 2007 cited in Olorunfemi 2011) found that floods are already having severe impacts on cities, smaller urban centres and rural areas in many African nations. For instance, heavy rains in East Africa in 2002 caused floods and mudslides and forced tens of thousands to leave their homes in Rwanda, Kenya, Burundi, Tanzania and Uganda (Huq *et al.*, 2007). In Nigeria, Akinyemi (1990), Nwaubani (1991), Edward-Adebisi (1997) noted that flooding in various parts of Nigeria have forced millions of people from their homes, destroyed businesses, polluted water resources and increased the risk of diseases. Etuonovbe (2011) averred that in the last three decades, the impacts of flooding have increasingly assumed threatening proportions, resulting in loss of lives and properties.

Lagos State Flooding Experience

As being experienced in other parts of the globe, the spate of flooding in Lagos State in recent times has become a serious concern for people and government (Aderogba, 2012). Olajuyigbe, *et al.* (2012) observed that the coastal cities of Lagos, Port Harcourt, Calabar, Uyo,

Warri among others have severally experienced incidences that have claimed many lives and properties worth millions of dollar. Studies have also shown that the frequency of occurrence in several parts of Lagos Metropolis with the attendant havocs call for concern and serious attentions too (Akani and Bileanmi, 2011). Many parts of Lagos State are being ravaged annually by flooding. The Punch (2010) reporting on flooding in Lagos, Nigeria made detailed report of frequent flood occurrences in Ikoyi, Victoria Island, Ipaja-Ayobo, Ajegunle, Ikorodu, Agiliti and Mile 12 (Olajuyigbe *et al.*, 2012). Etuonovbe (2011) added that for residents of Lagos, the rainy season is undoubtedly not the best of the year as the period comes with perennial problems of flooding which leaves many homes swamped resulting in loss of property and sometimes human lives. The rising trend of devastating flooding is acknowledged by most stakeholders. Aderogba (2012) however noted that many reports on flooding in Nigeria have been journalistic, qualitative, superficial and lacking directions for professionals and policy makers.

In providing quantitative and objective assessments of losses on property value arising from flooding, the perception and opinion of valuation experts on flood risks cannot be over-emphasized. According to Slovic (1987), when evaluating hazards, people commonly rely on intuitive risk judgments often called “risk perceptions”. The author however observed that such perceptions may differ considerably from expert assessments of risk, as individuals find it difficult to evaluate probabilities of infrequent hazards or may lack adequate information about risk. The perception of flood risk and approach to its assessment are important factors in forming experts’ opinion on flood risk assessment. It has been estimated that, ‘property damage has been doubling about every seven years over the past 40 years’ (ICSU, 2012). However, despite prolific media reporting in recent years stimulating an international preoccupation with the impact of floods on people and property, there are contradictory opinions about the specific effect of floods upon property values (Small *et al.*, 2013).

Corroborating this, The Guardian (2011) reported that consequent upon the heavy rainfall that result in inundation of most parts of Lagos and where about 40 percent of properties were affected, real estate experts are singing different tunes on the probable effects on rents and property values in the affected areas. This study therefore is set out to examine the perception of Estate Surveyors and Valuers' on flood impact on residential property value in Lagos State, Nigeria.

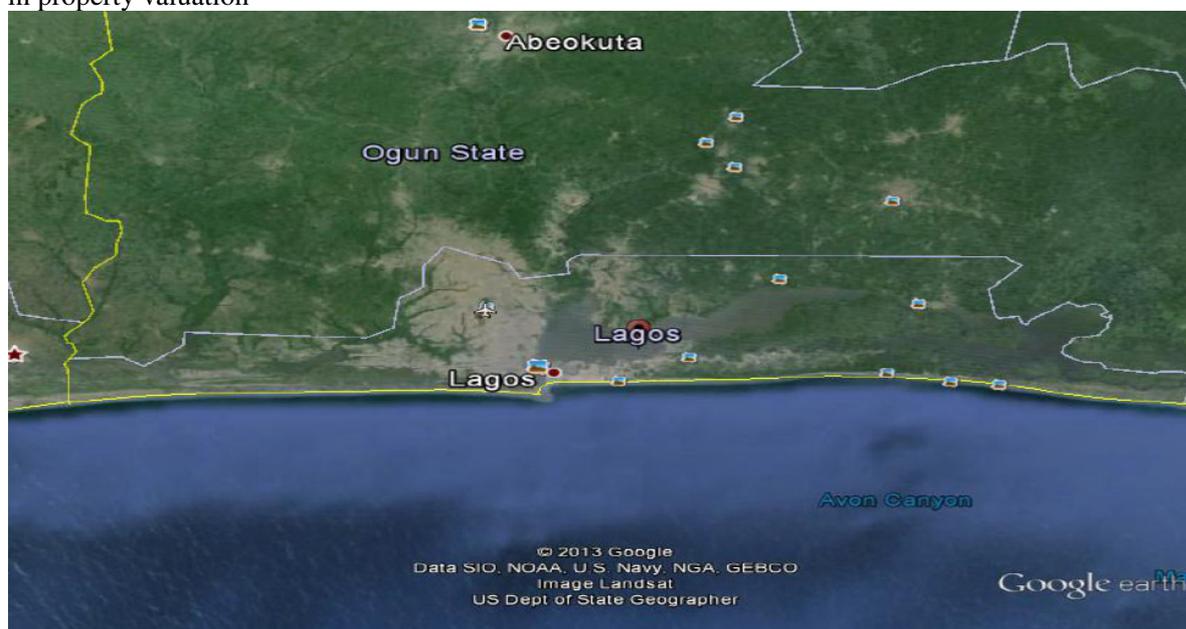
Aim and Objectives of the Study

The main goal of this study is to examine the perception of estate surveyors and valuers' on the impact of the rising trend in flood incidence on flood risk residential property in Lagos State. This is with a view to providing a more reliable opinion of value on such properties. Towards achieving this, the following objectives are set to;

- find out valuers' perception about flood incidence
- examine valuers' perception of severity of impact in the areas affected
- obtain valuers' opinion on adequacies of key valuation elements in flood risk assessment
- identify ways to improve flood risk assessment in property valuation

Study Area

Lagos metropolitan area sprawls over large islands separated by creeks on a vast lagoon on the Bight of Benin and bordered by the Atlantic Ocean to the South. The entire region lies within the coastal low land of south western Nigeria – generally less than 100m above sea level; and the average gradient is less than 1:100,000 (Aderogba, 2012). The entire region is drained southward into the Atlantic Ocean. The climate is tropical continental with rainfall almost throughout the year and with double maxima. Rainfall is increasing in amount, intensity, spread and duration, though its inclement warmth with run-offs is increasing in volume and areas of coverage (Aderogba, 2012). The natural vegetation is salt water mangrove swamp forest which has undergone tremendous developments for various purposes significant among which include infrastructure, industrial, commercial and residential developments. What remains of the natural vegetation and landscape is insignificant. The challenges of Global Warming are obvious and threatening (Aderogba, 2012; Rudrappan, 2011).



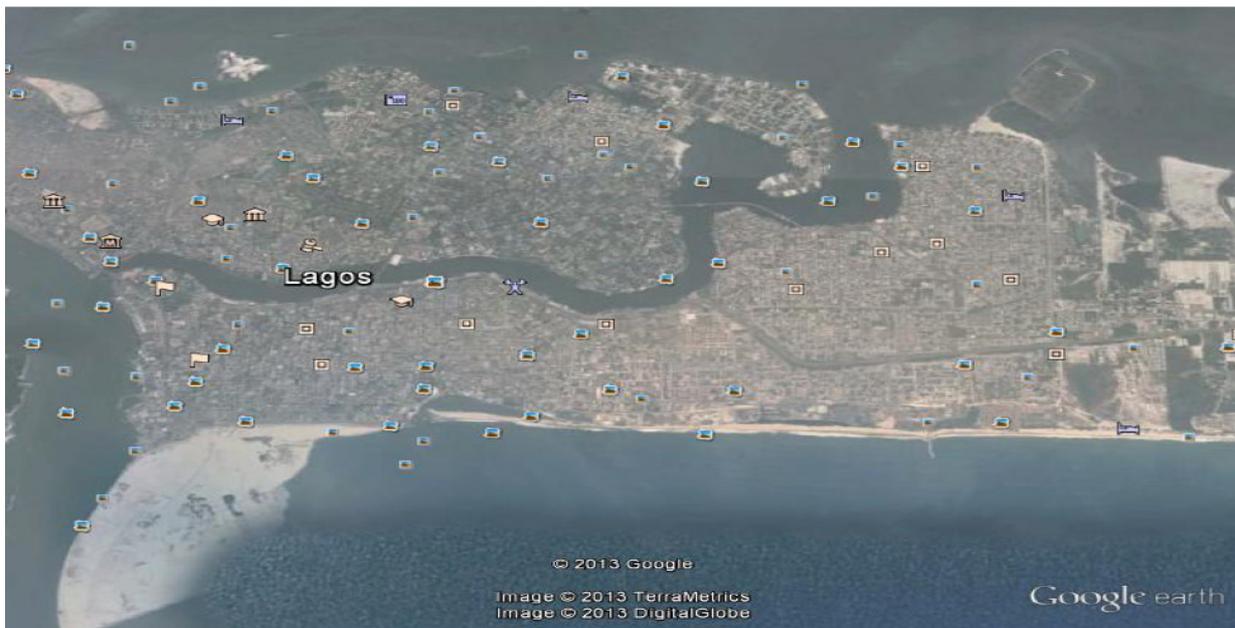
Source: Google earth (2013)

6°32'44.32" N 3°29'35.70" E

Figure 1 A GPS Map of Lagos State bordering the Atlantic Ocean in the South

The population of Lagos State according to the National Population Commission Report (2006) currently stands at 9,013,534. The Government estimates that Lagos' population could be 25 million by 2015 as people continues to migrate from hinterland and rural areas into Lagos State (Aderogba, 2012). Lagos State is Nigeria's economic capital as well as its financial and commercial nerve centre. With over 2000 manufacturing industries and 200 financial institutions (Ayida-Otobo, 2009), Lagos State alone accounts for over 70% of National industrial investments; 65% of its commercial activities; 70% of total National cargo freight; over 50% of Nigeria's Global System of Mobile Communication subscribers; and over 70.61% of international and 58.30 % of domestic aviation

traffic (Bamidele, 2009). Flood hazard in Lagos Metropolis neither spare the highbrow nor leave out the high density (middle-income) neighbourhoods. The prevalence of slum and informal settlements even worsen the situation by increasing vulnerability to the risk. Frequent flooding occurs in Ikoyi, Victoria Island, Ipaja-Ayobo, Ajegunle, Ikorodu, Agiliti and Mile 12 (The Punch, 2010). The BNRCC (2009) also noted that some of the Nigeria's most expensive properties are located in exquisite estates in floodplain neighbourhood such as Victoria Island, Ikoyi, Lekki in Lagos State and their un-mitigated exposure to these challenges have serious implication for the finance and insurance industry of the nation.



Source: Google earth (2013)

6°26'03.27" N 3°26'46.94" E

Figure 2 A GPS Map of Lagos State showing Ikoyi, Victoria Island and Lekki-Axis.

Material and Methods

Primary data used in this study was gathered through questionnaires and in-depth interview with the respondents. Questionnaires were administered to elicit information on respondents' perception of flood incidence, impact on property, effect on property value, flood risk analysis and

assessment of value of flood prone properties. The study population is the 314 registered estate surveying and valuation firms in Lagos State (NIESV LAGOS 2012). A total of 245 (78.02%) firms were randomly selected and questionnaires were administered to respondents in the rank of Senior Valuation officer, Head of Departments,

Partners who are deemed to possess adequate experience in valuation exercise. Secondary data were collected mainly from journal publications, NIESV record, dailies, and online materials. The Data gathered were subsequently analysed with the statistical package for social sciences (SPSS) version 17.0

Results

Two hundred and forty-five (245) questionnaires were administered on Estate Surveyors and Valuers in the study area. Table 1 shows the response rate. Table 1 shows that out of the 245 questionnaires administered on Estate Surveyors and Valuers in Lagos State, 224 (91%) were completed, returned and used for subsequent analysis. The level of response is high and deemed sufficient to draw reliable conclusion on the subject.

Table 1 Questionnaire Distribution

Study Group	Questionnaire Distributed	Questionnaire Retrieved	Response Rate
Estate Surveyors and Valuers	245	224	91%

Table 2 Profile of the Respondents

Qualification	Professional Status	Designation	Years of Experience
HND	43 (19.2%)	Aspiring	39 (17.4%)
B.Sc	119 (53.1%)	Probationer	77 (34.4%)
M. Sc	56 (25.0%)	Associate	97 (43.3%)
Ph.D	6 (2.7%)	Fellow	11 (4.9%)
Total	224 (100%)		224 (100%)

Table 2 shows the analysis of responses about academic and professional qualifications, office held and years of experience of the respondents. The table shows that 119 (53.1%) of the respondents are first degree holders and 62(27.7%) indicates having post-graduate degrees. Also, a total of 185(82.6%) are on different status of the institution’s affiliation while 39(17.4%) indicates that they have the intention to acquire professional status, they are yet to register with the Nigeria Institution of Estate Surveyors and Valuers. Furthermore, analysis of responses in the table shows that majority 118(52.7%) of respondents are Senior Valuation officers in most firms visited while, 53(23.7%) are Managers, 38(17%) are Head of Departments and 15(6.7%) are Partners. It was further gathered that 122(54.5%) have been in real estate practice for a minimum of 10years and an average of 15years while 43(19.2%) have been in practice for more than 20 years. It could be deduced that the level of education, years of experience, the calibre of respondents and the nature of office held would

have afforded them the opportunity of being involved in assignments or training in the area being investigated. It is therefore presumed that responses emanating would be informed and reliable for inferences concerning the theme of this study.

Table 3 Nature of Property transaction in flooded or flood prone locations

Property Transaction	Frequency	Percentage
Sale	167	74.6%
Acquisition	63	28.1%
Lease	91	40.6%
Management	105	46.9%
Valuation	83	37.1%
Development	74	33.0%
Renewal	37	16.5%
Others	23	10.3%

Respondents were requested to indicate the nature of property transaction that the firm is currently or previously involved in flood prone

areas of Lagos State. Analysis of responses shows that the leading transaction is sales with 167(74.6%) favourable responses. This is followed by Management with 105(46.9%) and Lease 91(40.6%). Moreover 83(37.1%), 74(33.0%), 63(28.1%) and 37(16.5%) indicates involvement in valuation, development, acquisition and renewal transactions respectively. On making further enquiry those that indicate involvement in other transactions identified such transactions as site/property identification, mapping, title registration and rating. It is important to note that responses are multiple

choices and indicate involvement of respondent's firm in more than one transaction.

Perception of Flood Incidence/Impact on Subject of Transaction

Respondents were requested to indicate their perception of flood incidence and actual flooding on their respective subject of transaction in flood prone areas of the state. Perception of incidences are scaled against the following indices; very high, high, low, very low while perception on actual impacts are measured as very significant, significant, less significant, not significant.

Table 4 Respondents' Opinion of Flood Incidence/Impact on Subject of Transaction

Perception of incidence/impact	Highly Significant	Significant	Less Significant	Not Significant
Very High	71(31.6%)	72(32.1%)	43(19.2%)	38(16.9%)
High	59(26.3%)	77(34.4%)	42(18.6%)	46(20.5%)
Low	55(24.6%)	46(20.5%)	58(25.9%)	65(29.0%)
Very low	39(17.4%)	29(12.9%)	81(36.2%)	75(33.5%)
Total	224	224	224	224

The analysis of responses in Table 4 reveals a bi-modal trend between very high (31.6%) to high (32.1%) perception of incidence and low to very low perception of incidence where impact assessment also record major counts from less significant (36.2%) to insignificant (33.5%) for the respective perception of incidence. By implication, regardless of the nature of transaction

on the subject property, estate surveyors show consciousness of the level of exposure of a flood prone property to flood risk by reason of location. This trend however merely indicates the perception of the vulnerability of a property by the respondents though it is yet not clear how this is considered or provided for in the actual valuation of affected property.

Table 5 Causes of Flooding in Lagos State

Cause of Flooding	No of Respondents	Percentage
Rainfall	224	100%
Release of excess water from dams	198	88.39%
Ocean Surge	105	46.88%
Encroachment of floodplains	179	79.91%
River overflow	167	74.55%
Lack of proper channelization	201	89.73%
Blockage of canal and drainages	216	96.43%
Construction and reconstruction	135	60.27%
Terrain	79	35.27%
Land reclamation	123	54.91%
Violation of planning regulations	156	69.64%
Illegal structures on drainage channels	132	58.83%
Collapse of bridges	7	3.13%

The opinions of respondents were also sought concerning the causes of flooding particularly in the affected neighbourhood. Among the major causes identified are rainfall (100%), blockage of canal (96.43%), lack of proper channelization (89.73%), release of excess water from reservoirs (88.39%), encroachment of floodplains (79.91%) and river overflow (74.55%). Other factors include violation of planning regulations (69.64%), construction and reconstruction activities (60.27%), Illegal structures on drainage channels (58.83%), land reclamation (54.91%), ocean surge (46.88%) and terrain which is (35.27%). It would be inferred that all the respondents are of the opinion that rainfall is a leading and major cause in most areas affected by flooding. Other leading causes points towards obstructed and inadequate drainage system, encroachment and violations of physical planning as well as excess water from reservoir or river overflow.

Approach to flood risk assessment in property valuation

Examining the current valuation approach to assessing the value of flood risk/impacted properties, respondents were requested to indicate whether the conventional valuation methods often engaged adequately assess flood risk/impact on residential properties by taking into consideration the sources of flood risk identifiable in a neighbourhood, the level of infrastructure and physical development, the quality and level of exposure of the subject property. In this manner, three key inputs wherein flood risk could be embedded are examined. These are location discount, depreciation factor and capitalization rates. Table 6 below presents the opinions. It is important to state that information provided by those that indicated current or previous involvement in valuation exercise of the class of property under investigation was used.

Table 6 Opinions on flood risk/impact assessment in conventional valuation

Vital valuation variables	Source(s) of flooding	Level of development	Construction quality	Level of exposure
Location discount	7	38	-	12
Depreciation factor	4	-	67	10
Capitalization rate	-	31	14	-
Total	11(13%)	69(83%)	81(98%)	24(29%)

Table 6 above attempts to decompose key inputs in conventional valuation techniques under which flood risk assessment could be embedded, summarized or reflected. Thus, with conventional valuation methods, responses reveal that just 13% and 24% have been giving consideration to sources of flooding and level of exposure of the subject property while 83% and 98% have been giving consideration to the level of neighbourhood development and quality of subject property. By implication, it is evident that whether expressly or impliedly, flood risk/flood impact is oftentimes subsumed in key valuation variables, i.e. location discount, depreciating factor or capitalization rates though the adequacy of such practice is not yet verified. It could be further observed that each valuation variables

either leaves out or did not adequately consider an input of flood risk assessment as shown in Table 6. This indicates that the different conventional approaches to residential property valuation end up using indices that are not representative of flood risk and impact assessment.

Discussion

Respondents' perception of the frequency of occurrence and degree of flood impact on property have been examined and presented in Table 4. The table reveals amongst other things that valuation experts are of the opinion that there are differential impacts on property value. It further shows that while flood incidence may be perceived high with high impact in a particular location, the incidence might still be perceived

high but with low impact in another location. For instance, incidence of flooding is perceived high for locations such as Lekki and Ajegunle along Ikorodu road, though, the degree of loss arising thereof from both locations could be enormous, yet, the overall impact on property value in the two property sub-markets differ and this is attributed to the level of infrastructure and economic development of the two neighbourhoods. Consequently, respondents estate surveyors and valuers are of the opinion that despite the current spate of incidence of flooding in Lagos State, losses such as building failure, prolonged void and huge cost of cleaning and reinstatement arising could be significantly isolated in flood prone developed neighbourhoods but pronounced in floodplain areas without less infrastructure development. Respondent estate surveyors and valuers are of the opinion that the overall property market will not fall as a direct result of flooding.

Table 5 shows the leading causes of flooding in the affected neighbourhoods in Lagos State. Among the major causes identified are rainfall (100%), blockage of canal (96.43%), lack of proper channelization (89.73%), release of excess water from reservoirs (88.39%), encroachment of floodplains (79.91%) and river overflow (74.55%). Other factors include violation of planning regulations (69.64%), construction and reconstruction activities (60.27%), illegal structures on drainage channels (58.83%), land reclamation (54.91%), ocean surge (46.88%) and terrain which is (35.27%). From the above, it would be discovered that the causes can be divided into natural and human induced. The natural which is mainly rainfall and ocean surge had been a perennial source of flooding though it is increasing in intensity. The human induced include obstructed and inadequate drainage system, construction activities, encroachment and violations of physical planning as well as the release of excess water from reservoir or river overflow. Identifying and mapping of these sources in any flood prone neighbourhood is important to determine its resilience in the event of flooding and consequently the extent of

damage inflicted on properties in the neighbourhood.

Meanwhile, in order to understand the relationship among flooding, neighbourhood vulnerability and property value as well as how losses arising from inundation influence opinion of value, key inputs in valuation methods were examined. In Table 6, three key inputs commonly used in conventional valuation methods, that is the location discount derived from adjusting comparables, the depreciation factors obtain from the state of the property and the capitalization factor, a market determined index are examined to show how adequately they considered flood risk variables. Although, respondents admit that vulnerability of neighbourhood and properties differs as sources of flooding and level of infrastructure and physical development also vary, table 6 shows that key valuation approaches may have ignored or inadequately consider flood risk assessment variables. This thus implied that the different opinion of value under these circumstances are deficient in the areas of flood risk and impact assessment and as thus may not be representative of actual open market value of the property affected.

Conclusion and Recommendations

The study examined the perception valuation experts on the impacts of flood risk on property value in Lagos State. This study is necessitated by the rising incidence of flooding and severity of damages to property sending shivers down the spine of property owners/investors. The opinion of valuation experts are needed to allay the fears of investors in the property market by providing reliable advice on property value that adequately assess and incorporate flood risk associated with flood prone properties. As deduced from various studies reviewed as well as the result of analysis of both the questionnaire and interview, the rising trend of flood incidence and damage on property could not be denied. From the respondents' perspective, most cases of severe flood damages are largely isolated to cause major disruption in the overall property market value. Regardless of isolation of cases, the study shows that the

sources of flood risk and level of neighbourhood development plays important role in forming opinion on flood prone residential properties. It is therefore suggested that the different sources of inundation peculiar to different flood prone neighbourhood are identified and the vulnerability mapped out. This would help to ascertain the degree of vulnerability, one of the variables in flood risk assessment and give the general public a better idea of the impact of flood risk on property value in Lagos State.

In addition, in the valuation of flood impacted property, the cost of damages and losses caused by flooding cannot be overlooked as these directly varies with the rising incidence and severity of flooding. Hence, it is suggested that current valuation methodologies be reviewed to make provision for harmonised and simplified process of flood risk analysis in the valuation of flood prone property. It is therefore recommended that the Nigeria Institution of Estate Surveyors and Valuers (NIESV) in conjunction with the Estate Surveyors and Valuers Registration Board of Nigeria (ESVARBON) and academic arm of the profession collaborate with researchers in the field across the globe to undertake the task and deliver a refined, simplified and harmonised approach to flood risk analysis and assessment in property valuation.

References

- Aderogba K. A. (2012), Global Warming and Challenges of Floods in Lagos Metropolis, *Nigeria Academic Research International Vol 2 No. 1*
- Aderogba K. A. (2012), Qualitative Studies of Recent Floods and Sustainable Growth and Development of Cities and Towns in Nigeria. *International Journal of Academic Research in Economics and Management Sciences June 2012, Vol. 1, No. 3*
- Ayida-Otobo, A. (2009), The state of Lagos Housing Market Published by Roland Igbinoba Real Foundation for Housing and Urban Development (RIRFHU)
- Akanni, O. and Bileanmi, L. (2011), Flood: Lagos residents forced to relocate: Drowning teenager rescued” in *Vanguard: Towards a Better Life for the People*. Lagos: Vanguard Media Limited. (Friday, July10), p. 20.
- Akinyemi, T. (1990), Stemming the Tide of Lagos Floods, in: *The Guardian*, Friday, July 20, pp: 7
- Askew, A. J. (1999), Water in the International Decade for Natural Disaster Reduction. In Leavesley *et al.* (Eds.), *Destructive Water: Water-caused Natural Disaster, their Abatement and Control*. IAHS Publication No. 239.
- ActionAid International (2006), “Climate change, urban flooding and the rights of the urban poor in Africa: Key findings from six African cities”. (Available on <http://www.actionaid.org/docs/urban%20flooding%20africa%20report.pdf>)
- Bamidele, O. (2009), Need for Fed Govt presence in state capitals: A case study of Lagos Megacity development. An Article in *The Nation* Published on 01-06-2009 in the Category of Building and Properties. Retrieved from http://www.thenationonline.net/archive2/tblnews_Detail.php?id=74165
- BNRCC (2008), “Building Nigeria’s Response to Climate Change” An Article in the *Guardian* of Monday, 18th July, 2011
- Dlugolecki, A. Clark, K.M., Knecht, F., McCaulay, D., Palutikof, J.P., and Yambi, W. (1996), “Financial Services.” *Chapter 17 in Intergovernmental Panel on Climate Change 1995: Impacts, Adaptations and Mitigation of Climate Change: Scientific and Technical Analyses*, Cambridge University Press, pp. 539-560.
- Edward-Adebiyi, R. (1997), The Story of Ogunpa, in: *The Guardian*, Saturday, May 17
- Etuonovbe A. K. (2011). The Devastating Effect of Flooding in Nigeria. A Paper Presented at the FIG Working Week 2011 Bridging the Gap between Cultures Marrakech, Morocco, 18-22 May 2011
- Few, R., Ahern, M., Matthies, F., and Kovats, S. (2004), “Floods, Health and Climate Change: A Strategic Review”. Working Paper No. 63. Tyndall Centre for Climate Change Research.

Huq, S., Kovats, S., Reid, H. and Satterthwaite, D. (2007), Editorial: "Reducing Risks to Cities from Disasters and Climate Change", *Environment and Urbanization*, 19 (1), 3-15

International Council for Science. (ICSU 2012), 'A science plan for integrated research on disaster risk – ICSU', available at:

<http://www.icsu.org/publications/report-and-reviews/IRDR-science-plan/> , viewed on: 18 July 2012.

Intergovernmental Panel on Climate Change (IPCC 2007), Climate Change Impacts, adaptation and Vulnerability, Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change Assessment Report, Summary for Policymakers. Retrieved from

<http://www.ipcc.ch/pdf/assessment-report/ar4/wg2/ar4-wg2-spm.pdf>.

IFRC, (2003), *World Disaster Report 2003* (Geneva: IFRCRCS); at: <www.ifrc.org>.. pp 11

Jones Lang Lasalle (2010), From Sandbags to Solar Panels; future-proofing UK Real Estate for Climate Change Resilience: Advance Series, Publication of the Jones Lang Lasalle

Munich Re. (1973), *Flood Inundation*. Munich Reinsurance Company, Munich, Germany

Nigeria Institution of Estate Surveyors and Valuers, Lagos State Branch Annual Report 2012

Nwaubani, C., (1991), Ogunpa River Leaves Bitter Aftertaste in Tragic Course Through Abeokuta; in: *The Guardian*, October 21, pp: 9.

Olajuyigbe A. E., Rotowa O. O. and Durojaye E., (2012), An Assessment of Flood Hazard in Nigeria: The Case of Mile 12, Lagos. *Mediterranean Journal of Social Sciences Vol. 3* (2)

Olorunfemi F. B. (2011), Managing Flood Disasters under a Changing Climate: Lessons from Nigeria and South Africa" Being A Paper Presented at Nigerian Institute of Social and Economic Research Seminar Series, NISER,

Social and Governance Policy Research Department, Ibadan 3rd May, 2011

Rudrappan, D. (2011), *Reconciling Climate Change and Economic Growth: the Need for an Alternative Paradigm of Development*. 34th Public Lecture of Covenant, University. Cannan Land, Ota, Ogun State, Nigeria.

Sarewitz, D., Pielke Jr., R. and Byerly Jr., R. (2000), *Prediction: Science, Decision Making and the Future of Nature* (Covelo, CA: Island Press): 405

Small, G., Newby, L. and Clarkson, L. (2013), Opinion Versus Reality: Flood-affected Property Values in Rockhampton, Australia. Retrieved from

www.prrres.net/papers/Small_Opinion_versus_Reality

Sagala, S. A. H. (2006), Analysis of Flood Physical Vulnerability in Residential Areas. Case Study: Naga City, the Philippines. Thesis Submitted to the International Institute for Geo-information Science and Earth Observatiop

Slovic, P. (1987), Perception of risk, *Science*, 236 (4799), 280 – 285, doi:10.1126/science.3563507.

The Nigerian Punch, (2010). Lagos Flood. *The Punch Newspaper* Tuesday 12, October 2010. Retrieved from <http://www.punchng.com/Articl.aspx?theartic> on April 19, 2011

UNFCCC, Climate Change: Impacts, vulnerabilities and adaptation in Developing Countries, 2008

<http://www.wmo.ch/pages/prog/gcos/index.php>

The Guardian (2011), Rents & Property Values to Crash Due to Flooding, Say Estate Surveyors. An Article in *The Guardian* 2011 retrieved from <http://www.nigeriapropertycentre.com/blog/news/rents-a-property-values-to-crash-due-to-flooding-say-estate-surveyors>

The Nigeria National Population Commission Report (2006)