

Flooding in Nigeria and Sustainable Land Development: Case of Delta State

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Abstract

Several Nigerian communities had in recent times experienced an upsurge of groundwater flooding with devastating effects. The demand for land for development had not been without attendant problems caused by the flood and neglect of building and other related laws. The work identified main factors that cause groundwater flood and their effects thereof. Questionnaires were designed and administered on respondents from the research area, while a relative severity index established. It was found from the analysis of combined responses using the weighted means method that property values are adversely affected by flood. And that flood activities hinder appreciable land development. This paper recommends among other things the enforcement of building and other laws aimed at reducing the incidence and effect of flood and the use of modern digital GIS devices in flood forecasting.

1. Introduction

Land is and has been an integral part of the wealth of every nation, issues relating to its acquisition, disposition, management and control form matters of great interest. Since land is an important economic base of most international states, there is the need for its proper conservation. In recent times in Nigeria, groundwater flooding has emerged as a serious threat to achieving a sustainable land development and therefore requires urgent intervention by Government, individuals and other stakeholders.

The menace caused by groundwater flooding cannot be overemphasised as it leaves much to be desired. Flooding has been variously defined. The Wikipedia encyclopaedia (2010) defined it as an overflow or accumulation of an expanse of water that submerges the land. It is a peak discharge of water exceeding the channel capacity, which may have been naturally induced or caused by failure of man-made structures. The National Erosion and Flood Control Action Plan Committee (2005) defined flooding as a condition when the discharge of a river cannot be accommodated within the margins of its normal channel so that waters spread over adjoining land.

The above notwithstanding, anytime parcels of land that are normally dry become submerged with water, resulting in loss of lives, properties and other forms of devastations; it is termed *groundwater flooding*.

2. Causes and Effects of Flooding

The United Nations Commission on Sustainable Development (1997) earmarked some probable causes of flooding to include heavy tropical storm, high intensity of rainfall, climate changes, deforestation and dam burst. Furthermore, Okehi (2006) in his paper presentation listed certain factors as being responsible for flooding. These include, drainage blockage by illegal disposal of municipal and other waste products, poor maintenance of waterways and drainages, heavy rainfall and disregard of Town Planning and Urban Laws especially during constructions.

The recent flooding experienced in various quarters within the nation, Nigeria with its attendant environmental hazards and other calamities is believed to have been the result of excess water from the Lagdo Dam situated in the State of Cameroun, which were opened thereby letting out more water than usual into Nigeria. The National Emergency Management Agency (NEMA) stated in an interview that it was better to allow the release of the water from the Cameroun Dam rather than risking a dam break when the waters become too full.

The recent unprecedented national flood disasters were widely reported by various newspapers and other media outfits. It is worthy to note that due to limitations and the need to avoid vain repetitions, there will be a focus on the items reported by the Guardian Newspaper being reputable and widely read.

On Tuesday, January 8th, 2012 the Guardian Newspaper while reporting a flood in Jigawa State, stated that the Nigerian Ports Authority (NPA) had donated relief materials to the Jigawa flood victims through the State

Emergency Management Agency (SEMA) in Dutse. The items included 7000 treated mosquito nets, 1300 blankets, 600 bags of rice and 1400 mattresses. The Executive Secretary of SEMA, Alhaji Ibrahim Aliyu was reported to have said that the state was currently having camp in Ringim, a Local Government Area for internally displaced persons. Also that the most affected councils were; Ringim, Taura, Jahun and Miga where most victims almost lost everything to the flood.

It is pertinent to state that the above gesture by the NPA represents the general response and attitude of both the government and others towards the plight of flood victims. The above notwithstanding, it seems that most victims remain inconsolable and demoralised despite the relief materials. The gestures seem to be inadequate and leave much to be desired. It is perhaps the general notion of land as priceless and irreplaceable that may be actuating this response from the victims. Some of the lands were permanently covered with water, especially those close to the natural rivers and other waters; some pose danger as being prone to flooding activities while the topography of some have changed negatively. Furthermore, some agriculturally productive land may become uncultivable et cetera.

The above is a challenge as compensations ought to go beyond ordinary relief materials being provided. The important question becomes 'how can we ensure that adequate succour is provided for the victims of the flood disaster across the country?'

The Guardian Newspaper of Tuesday, August 14th, 2012 reported that some parts of Plateau State had again come under severe flooding with 28 persons feared dead. According to the residents, close to a hundred communities were affected. The bridge linking the state and Lafia, the Nasarawa State caital and Taraba State was washed off by the said flood.

Furthermore, on the 9th day of October, 2012, the Guardian Newspaper on its front page reported an unprecedented tragedy that was unfolding as a raging flood spread from the tributaries of the River Niger into many communities killing many amid widespread damage to houses, farmlands and other properties worth billions of Naira. The paper further named some communities who were worse hit by the flood to include Oleh, Enweh, Asabasa and Irri in Delta State.

In Northern Nigeria, Borno, Yobe, Gombe and Plateau States were among the states with the highest casualty from the recent flooding. However, high levels of devastations were felt by others especially the riverine areas like Delta, Rivers, Cross-Rivers and Bayelsa States.

2.1 Land Development Issues

Every nation requires a sustainable land development in order to hold the place among the other nations of the world. Where land development is threatened by flood and other natural disasters, that nation would be incapable of developing its economy optimally. When land development issues are neglected, nation building becomes onerous and inhibited.

The Oxford Advanced Learner's Dictionary (2000:319) defined *land development* as a piece of land with new buildings on it especially done with the aim of profiting thereof. Similarly, Olayonwa (2000), while quoting Section 22(1) of the British Town and Country Planning Act of 1891, stated that land development is the carrying out of building engineering, mining and other operations in, on, over or under land or making of any material change in the use of any building or other land. He further stated that it includes the modification of existing structures and other forms of property development. In Thorncroft (1976:21), land development is one of the methods of property investment making site development which has attendant risk. Despite the high risk involved in land development, its importance in nation building and in the achievement of a sustainable economy cannot be overemphasised. Land development involves a capital intensive activity by property owners and other investors alike for commercial, industrial, residential and recreational purposes.

An area that is prone to flooding activities or a place that had just experienced flood inundations will definitely attract little or no land development. More so, the tenement rates will automatically be lower than what was obtained in other flood free communities. In other words, in the aftermath of a flood disaster, land development issues halts or at best shuttles along. Some properties that were submerged may need rehabilitation work; those that had collapsed or are threatening to do so, may need a reconstruction while a few may be abandoned especially for fear of future floods. Because of the recent flooding activities experienced in many parts of the country but especially in the study area, land development had been negatively impacted. Inspection done in the study area revealed that the prices of properties are lower in value when compared to the prices of similar properties elsewhere, which shows that the demand for such properties were low. Similarly, tenement rates were lower comparatively. This is attributable to the floods experienced in the area.

2.2 Effect of flooding on Proof of Title to Land

It is trite law that when there is an action relating to a declaration of the title to land, the identity of the land in dispute is critical and must be proved by the plaintiff in order to entitle him to the judgment of the court. He must establish with certainty the identity of such land. The above was the holden of the court in the cases of Ezukwu

V Ukachukwu (2004) and Ogun V Akinyelu (2004). The court followed the aforementioned cases in Shukka V Abubakar (2012) and held that the plaintiff can discharge his duty by oral evidence describing with such degree of accuracy the said parcel of land in a manner that will guide a surveyor in producing a survey plan of the land. Another way is by filing a survey plan reflecting all the features of the land and showing clearly the boundaries.

On the premise of the above, it can be safely state that a prospective plaintiff from a flood prone area may find to onerous to prove title to land as the topography may change, boundaries may have moved to mention a few and the plaintiff may find it difficult to describe with certainty the said land. This is moreso, where natural objects were used to mark the boundaries. Some of the land may remain permanently submerged adding to the aforementioned difficulty.

On the same strength, the court in Karimu V Lagos State Government (2012) relied upon the decision of court in Odesanya V Ewedemi (1962) and held that the burden of proof of identity of the land is discharged by specific and unequivocal evidence as to the boundary of the land in dispute. The burden of proving the specific identity of the land does not shift, it is totally on the plaintiff.

A plaintiff seeking a declaration of title to land has therefore a duty to show clearly the area of land to which no claim relates, its exact boundaries and its extent; as no court would be obliged to grant a declaration to unidentified land. The above was in line with the decision of the court in the case of Asheik V Borno State Government (2012), which refereed with approval to the cases of Okochi V Animkwo (2003); Adeshola V Akande (2004) and Ogedengbe V Balogun (2007) respectively.

In the aforementioned Asheik's case, the court reiterated the four main ways of proving title to land:

- i. Traditional evidence;
- ii. Production of documents of title duly authenticated in the sense that their due execution must be proved;
- iii. By positive acts of ownership extending over a sufficient length of time;
- iv. By proof of possession of connected or adjacent land in circumstances rendering it probable that the owner of such connected or adjacent land would, in addition, be the owner of the land in dispute.

It is beyond argument that a land owner in a flood prone area would find it difficult, if not impossible to prove his title to land using some of the methods mentioned above as his acts of ownership may have been intercepted by flooding activities. Moreso, he may not prove by traditional evidence as most of the boundaries especially for farmlands and bare lands may have changed. Where these natural objects changed, the plaintiff may give conflicting evidence which the court will disregard.

3. Study Area

It is germane to state that the work pays close attention to the state of Delta, which by all standards had suffered over and above the other states in the recent flood and therefore recorded more displacements with the attendant destructions. In Delta State, over 50 communities were totally submerged resulting in the creation of 10 relief camps. Chief among the most affected communities were Oleh, Ozoro, Irri, Ivrogbo, Enwhe, Olomoro, Ughelli, Abari, Asabase, Ekregbesi, Uzere, Okpawha, Araya, and Idheze respectively. Due to the seeming similarities shared by these communities in terms of the causes and effects of the said flood, it is strongly believed that deductions and conclusions drawn from their study shall form a fair opinion of the position in the rest of the affected communities in the country.

The communities can be classified as low to middle income dominated socio-economic area. The properties are mainly residential, both free standing and low-rise multi-residential unit complexes. There were still few farmlands and commercial premises. Upon inspection, it was noted that despite elevations on the floor levels of some properties in the flooded areas, the floods still forced its way into them making most residents to evacuate. It is worthy to note that some farmlands and properties were experiencing flood inundation for the first time. The communities also had good access roads and transport services including electricity thereby making the potential flood liability the only main limitation to land development.

3.2 Research method

After identifying the communities that had been subject to varying degrees of flooding recently, a physical inspection of key areas was done to determine the extent of devastation and level of land development that existed before and after the flood. The State of Delta was chosen as study area while seven of the most affected communities were randomly picked for case study, these are Oleh, Ozoro, Enwhe, Asabase, Araya, Irri and Olomoro communities.

Furthermore, a fourteen (14)-item likert questionnaire was administered to two hundred and twenty five (225) respondents randomly picked from the said case study area that represents different socio-economic background. The questionnaire were read and completed for illiterate respondents. They require respondents to rate certain factors as the cause and effects of the flood under the options of; Agree (4 points), Strongly Agree (5 points);

Disagree (3 points), Strongly Disagree (2 points) and Undecided (1 point).

Results were analysed using weighted means.

3.3 Factors to be Rated

1. Floods are caused by topography, unhealthy human activities and blockage of drainage.
2. Floods are caused by overflow of rivers and oceans.
3. Recent flooding is a reason for lower property values in the area.
4. Social status and design of property affects rental values in the area.
5. Economic obsolescence, dampness and cracks as some of the dangers faced by properties.
6. Building collapse and foundation failure are imminent after a flood.
7. Costs of development in flood-prone areas are low thereby attracting developers.
8. Building regulations and other laws are needed to reduce flood and its effect.
9. Land owners and holders find it difficult to prove title in flood prone areas.
10. Land owner and other property insurance are widely known and practised in the area.
11. Properties including farmlands are lost to flooding activities.
12. Abandonment of land and other properties and relocation often result after a flood.
13. Relief items and other materials are viewed as adequate by flood victims.
14. Government and other stakeholders to do much more to prevent the occurrence and cushion the effects of flood.

4.1 Results

FACTORS	COMMUNITIES						
	Oleh	Ozoro	Enwhe	Asabase	Araya	Irri	Olomoro
1. Floods are caused by topography, unhealthy human activities and blockage of drainage.	4.68	4.00	4.95	4.09	4.65	4.00	3.97
2. Floods are caused by overflow of rivers and oceans.	4.72	4.00	4.95	4.55	4.60	4.00	5.00
3. Recent flooding is a reason for lower property values in the area.	4.90	4.60	5.00	5.00	4.95	4.60	4.95
4. Social stats and design of property affects rental values in the area.	3.00	2.50	2.00	3.00	3.25	2.00	3.00
5. Economic obsolescence, dampness and cracks as some of the dangers faced by properties after a flood.	5.00	5.00	4.95	4.55	4.95	4.00	4.25
6. Building collapse and foundation failure are imminent after a flood.	4.50	3.95	4.95	4.80	4.95	4.25	4.25
7. Costs of development in flood-prone areas are low thereby attracting developers.	1.25	2.00	2.00	1.30	1.20	2.00	2.95
8. Building regulations and other laws are needed to reduce flood and its effect.	2.45	3.25	3.00	2.95	2.45	3.00	3.25
9. Land owners and holders find it difficult to prove title in flood prone areas.	4.75	4.00	3.95	4.95	4.75	4.75	5.00
10. Land and other property insurance are widely known and practised in the area.	1.00	2.25	1.00	2.30	2.00	1.30	2.20
11. Properties including farmlands are lost to flooding activities.	5.00	4.95	4.95	5.00	5.00	4.90	4.85
12. Abandonment of land and other properties and relocation often result after a flood.	4.35	4.00	3.25	3.00	4.00	4.25	3.10
13. Relief items and other materials are viewed as adequate by flood victims.	2.00	2.80	2.75	3.00	2.20	2.85	2.65
14. Government and other stakeholders to do much more to prevent the occurrence and cushion the effects of flood.	5.00	5.00	4.95	5.00	4.00	4.65	4.25

It can be seen from the result that the mean rating as perceived by the respondents are very similar although they are from seven distinct communities. For an instance, they all are in agreement that the floods are caused by topography, unhealthy human activities and overflow of rivers and oceans (*see numbers one and two*). They also almost unanimously agree that he recent flooding had affected property values and that building collapse and foundation failure are imminent after a flood (*see numbers three and six*).

Similarly, they strongly agreed that various properties are lost to the flood and that land owners find it difficult to prove their title in flood prone areas (*see numbers 9 and 11*).

The respondents are unanimous in the disagreement that social status and design affects rental values and the fact that cost of development in flood-prone areas are low thereby attracting developers.

They also disagreed appreciably regarding the fact that land other property insurance are widely known and practiced. The issue of land insurance must be addressed to make it popular among the populace thereby cushioning to a large extent the effect of groundwater flood.

It is however surprising and a paradox at that to note that respondents view building regulations and other laws as unnecessary and therefore not needed to reduce flood and its effect. This could stem from the fact that building and other related laws are not being sufficiently enforced in most communities. Most are ignorant of their existence and actual requirements. These laws are not well known among the populace or are ignored and the machinery for their enforcements is not put in place. Moreso, their impacts are not felt among the communities. Therefore, government and other stakeholders must unite in the prevention and proper control of the incidence of groundwater flood to encourage sustainable land development.

5. Conclusion

Aside the loss of lives, there were also damages and loss of landed and other properties including bridges, sewage systems and canals. Furthermore, the lands which were affected by flood sometimes become generally unfit for agriculture leading to shortage of foodstuff and price increase. More so, some of the study areas form part of tourist attraction and has experienced a remarkable decline in tourism.

The result of this study shows that groundwater flooding affects property values, tenement rates and the ability of a land owner to prove his title to land in the area under research. Modern digital GIS devices should be employed in flood forecasting and must be taken seriously. Land development issues must be enhanced and protected using insurance and other flood management techniques.

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