IOSR Journal of Environmental Science, Toxicology and Food Technology (IOSR-JESTFT)
e-ISSN: 2319-2402,p- ISSN: 2319-2399.Volume 15, Issue 3 Ser. III (March 2021), PP 09-26
www.iosrjournals.org

The Courses and Effect of Flooding In Ibaji L G A of Kogi State, Nigeria.

Abdullahi Sule Ojo
a PhD (public Health Entomology) student of International University Bamanda, Cameroon.

Date of Submission: 10-03-2021 Date of Acceptance: 25-03-2021

I. Introduction

Flooding has been identified as one of the global phenomenon that is threatening human race and the general physical environment in almost all nations of the world. The history of flood revealed that it has happened in developed and developing countries, in West Africa sub regions, the impact of flood is felt in all parts of the nations including Nigeria. In Nigeria, where the impact of flood is felt, in all the geopolitical zones, however, it is more prominent in southern Nigeria. The increase in spatial use of land is orchestrated by varied human activities for survival due to increase in population and unabated urbanization process. This is the remote cause in the marginal increase in the cause of flooding around the globe particularly in the developing countries of which Nigeria is one.

The history of flood is as old as Man as noted in the Holy Bible (Genesis the first book of the Bible chapter 6, 7 and 8). This devastating event (flood) happened as sign of God' s anger at people' s wickedness. The flood were survived only by Noah, his family and pairs of all the animals species that took their refuge in the ark that Noah was told to build by God.

It is noted that not all natural disasters or calamities can be predicted, prevented, a state of preparedness and abilities to respond quickly to a natural calamity can considerably mitigate loss of lives and properties and human suffering and restore normalcy at the earliest which foster preservation of lives and properties in a given geographical areas.

Benny (2009) stated that natural calamity of different types and intensities affect nations all over the world. Because of the large geographical size of the country, different parts of the world face natural calamities (disasters) such as floods, drought, and earthquake among others at different point in time.

The vision of Nigeria to be among the first top twenty nations with leading economy by the year 2020 is now a mirage, if lives and properties are not safe from the frequent occurrence of flood in the country. Flood is one of the major factors that prevent Africa' s population from escaping poverty level (Action Aid, 2006). A flood results when a stream runs out of its confines and submerges surrounding areas (Stephen, 2011). Similarly, Kates (1985) defines flood as an overflow of an expanse of water that submerges land. European Union (2007) sees flood as a temporal covering of land by water, not covered by water before the incidence. Though, flood may be temporal as believed by the European Union, but the effects may not be temporal when such occurrence claims several lives and properties. Flood not only affects the victims, but also has a great gross effect on the national economy of the country where poverty level rises due to the incidence.

Encarta Dictionary defined flood as a water covering previously dry land or area; a very large amount of water that has overflowed from source such as river, stream or a broken pipe into a previously dry area. Flood as one of the first devastating event recorded in the Holy Bible is inimical to the health of man, it destroyed properties and also retard the development of nations.

Oreyomi (2005) defined flood disaster as a gradual accumulation or unusual increase of water volume in the waterways or channels which lead to overflow of water to the previously dry area. He also defined disasters as a sudden occurrence following an unusual event which may involve loss of lives and extensive damage to properties.

Encarta Dictionary defined disasters as an event that causes serious loss, destruction, hardship and unhappiness or death.

Flooding has been described by Agbola (2010) as one of the nation' s most common hazards that has affected man and has activities for many years. It could be regarded both as physical and socioeconomic phenomena which affect man' s activities. Many factors have been responsible to be the cause of flooding in both urban and rural areas.

Iwena (2000), defined flooding as the accumulation of an abnormal large volume of water in an area which has refused to percolate or flow among. It usually occurs mostly when there is heavy rainfall in an area

couple with run-off as a result of inability of water to percolate into subsoil. He further stressed that the causes of flooding can be categorised principally into two:

A. Natural causes which includes:

1. Heavy or torrential rainfall
2. Ocean storms and tidal waves usually along the coast.

B. Artificial causes of flooding. They include the following:

1. Collapse of dam
2. Poor drainage system
3. Inadequate urban planning
4. Erection of building along water channels
5. Refuse dumping into the waterways that block the easy flow of water
6. Presence of steep slopes in an area among others.

Floods are naturally occurring hazards. They become disasters when human settlements occupy the flood plain. Increase in population combined with poor resource management has resulted in new types of flooding. Less water is held in upper reaches of the catchment basin and the increased run-off water flows rapidly to the plains with the effects of more frequent, unexpected and severe flooding (Rana, 2009).

The phenomenon of flood hazards, according to Ward (1978), comprises several aspects such as structural damage, loss of lives and properties, disruption of social and economic activities, poor transport, communication and the destruction of agricultural land which lead to scarcity of food and starvation as well as health hazards by way of pollution.

Like in other developed countries such as United States of America, United Kingdom to mention a few, flooding is becoming a recurrent decimal in African countries especially Nigeria. In Ilorin, the flood disaster has been recorded in 1973, 1976, 1979 and 2011 respectively. The flood event of 1976 revealed that 24 houses were submerged and 56 others had to be evacuated. The Ibadan situation is not different; the city has been subjected to flooding repeatedly. The first flood recorded in the city occurred in 1933, when Gege River which flows through a section of the city overflow its bank and drowned the houses of those living along its bank (Bidmus, 2004).

The most catastrophic and most publicised flood that hits Ibadan occurred on 31st August, 1990, it was as a result of twelve hours down pour which eventually claimed 300 lives, 50,000 were rendered homeless and properties worth millions of naira were destroyed. Other previous flood occurrences in Ibadan are 1973, 1978, 1980, 1982, 1986 and 2011 (Bidmus, 2004).

The most recent flood that hits the nation was that of 24th September, 2012. The flood sacks millions from homes in Kogi, Benue, Edo and Imo. Thousands of persons have been displaced by floods in Ibaji Local Government Area of Kogi State following the release of water from Kainji and Shiroro dams in Niger State. Ibaji was noted to be the food basket of Kogi State, now begging for food as a result of flood disasters that relocated them by force and destroyed their farm products.

Flood is also defined by the International Commission on Irrigation and Drainage as a relatively high flow or stages in a river, markedly higher than the usual, also the inundation of flow land which may result there from. Conceived in this manner, flood is essentially a physical phenomenon. Floods can arise from abnormally heavy precipitation, dam failures, rapid snow melts, river blockages or even burst water mains.

The table below shows selected severe flood disasters:

Year	Location	Deaths	Losses in US$ million
1966	Italy	113	1,300
1983	Peru, Ecuador	500	700
1983	Spain	42	1,250
1986	China	260	1,210
1987	USSR	110	550
1987	Bangladesh	1,600	1,300
1988	Thailand	371	300
1991		2,295	12,500

Types of Floods

Flood can be classified as flash floods, river floods and coastal floods.

Flash floods: These are usually defined as floods which occur within six hours of the beginning of rain fall and are usually associated with towering cumulus clouds, severe thunderstorms, and tropical cyclones. Flash floods are normally a result of runoff from a torrential downpour particularly if the catchment slope is unable to absorb and hold a significant part of water.

Other causes of flash floods include dam failure or sudden break-up of ice jims or other river obstructions. Flash floods are potential threats particularly where the terrain is steep, surface runoff is high water flow through canyons and severe rainstorm are imminent.

River floods: River floods are usually caused by precipitation over large catchment area or by melting of the snow accumulated during the winter or sometimes both. The flood takes place in river systems. Factors governing the amount of flooding include ground conditions viz moisture in the soil, vegetation cover, depth of the snow and size of the catchment basin.

Coastal floods: This type of flood is associated with tropical cyclone (also called hurricanes and typhoon) catastrophic flooding from rain water is often aggravated by wind-induced storm sullages along the coast (Rana, 2009).

According to Landon (2010), river flood-plain have always provided sites for agricultural settlements, they are flat, fertile and the river provides a means of transport and communication. This is still important places for settlement and the communities in these areas can be a result of heavy rain or a rapid snow melt. Floods have a benefit to the ecosystem; they leave behind nutrient-rich silt, they recharge groundwater and they refill wetland. Human activities has contributed to the increase of flooding by removing vegetation through logging, overgrazing stock, mining, urbanisation and forest fire.

Floods are responsible for the highest proportion (39 percent) of deaths from natural disasters. People living on flood plains often have no choice about where they live, particularly in low income countries.

Rana (2009) described the general characteristics of floods as follows:

(1) **Depth of the water**: Building foundations and vegetations will have different degree of tolerance to being inundated with water.

(2) **Duration**: Degree of damage to structures, infrastructures and vegetations is often related to the length of time of inundation by water.

(3) **Velocity**: Dangerously high velocities of flow may create erosive forces and hydrodynamic pressure which may destroy or weaken foundation supports.

(4) **Rate of Rise**: Estimation of the rate of rise and discharge of a river is important as a basis for flood warnings, evacuation plans and zoning regulation.

(5) **Frequency of Occurrence**: The cumulative effects and frequency of occurrence measured over a long period of time will determine what type of construction or agricultural activities should take place on a flood plain.

(6) **Seasonality**: Flooding during growing and harvesting of crops may completely destroy crops, leading to starvation and famine. Also, flooding during the raining season will be more disastrous than dam failure in dry season.

However, many scholars and researchers are concerned about the increasing magnitude and frequency of flooding in the country even in areas of less expected. In spite of the universality of flood problems and the attention given to its control, it has remained unsolved

The occurrence of flood in different parts of Nigeria is becoming a worrisome event. The incident of flooding is becoming an event that occurs without notice. It beats even the theoretical calculation of all academicians.

River Niger is the major river in Kogi State that passes through Ibaji, the September, 2012 floods disasters is linked with this river. Large sum of money has been spent on the dredging of the river to make sure large volume of water is accumulated in the water channel to prevent spill over or overflow the bank, but the project is yet to see the light of the day. Flooding caused a lot of havoc and devastation to the nation' s economic. Ibaji Local Government Area of Kogi State was displaced by the occupants, houses were demolished and properties worth of millions of naira were destroyed. All these are the reasons why the researcher took up the challenge to view through the spectral of flood in Ibaji.

Ibaji Local Government Area was created from Idah Local Government Area in 1996. The Local Government is situated in southern part of the State, separated from Edo State to west by the River Niger and bordering Delta State in the south. Its headquarters is in the town of " Onyedega" . Ibaji means " beside water" , Onyedega means " Lion is in the stream" . The Local Government has an area of 1,377km^2 and a population of 128,129 at the 2006 census. Ibaji Local Government Area has ten wards which are:

(1) Odeke ward
(2) Ejule ward
(3) Aya ward
(4) Ujeh ward
(5) Iyano ward
(6) Onyedega ward
(7) Analo ward
(8) Akpanyo ward
(9) Unale ward
(10) Ojila ward.

The first executive chairman was Hon. Apeh David Ojochegbe. Ibaji Local Government comprises of few Igbo and dominated by Igala speaking tribe. The predominant occupation of the people is farming and fishing, only few of them are civil servants and traders.

Politics

Traditional administration also takes place in the Local Government and the indigenes have their administrative heads called " EJEH" . The EJEH has traditional control of power within the whole Local Government Area. The EJEH also have his service chiefs that is, the " Onus" representing some communities, the " Igagos" representing parts of the communities. They are answerable to Onus.

The main duties of EJEH Onus and Igagos are to settle disputes among their people in the community, offering necessary assistance to any needy member of the community hence enhancing social cultural integration with other association.

With the modern administration, the traditionalists come under the wards. Wards now serve as a forum whereby the opinions and needs of the people are made known to the Local Government.

Economy

As stated above, the source of income of Ibaji Local Government Area is through farming and fishing. They engaged in the production of rice and yam in a commercial quantity which are distributed to some parts of the States in the Federation as well as the Federal Capital Territory.

The problem of flood disaster and its challenges is a global problem which many authors have tried to examine and make useful suggestion as how best it can be tackled. Many writers have tried to identify factors influencing flooding while some have tried to identify the causes and effects of flooding among others. The concentration of economic and other activities in urban centres in Nigeria such as Kaduna, Lagos, Ibadan and Kogi to mention a few create a number of environmental problems such as pollution, erosion and flooding which is the major concern of this research work.

According to Olagun (2004), flooding is caused by rainfall, snow, melting ice and hurricane. He further stated that the common features of flooding are the destruction of lives and properties. In several countries, a distinction is made between direct and indirect damage. The direct loss includes those which result from loss of lives and destruction of properties while indirect damage is manifested from breakdown of human activities during floods.

Halley (2001) identifies the major cause of flood in Africa to be inadequacy of drainage. On the contrary, the major cause of flood in Nigeria has been identified to be excessive rainfall (Wetch, 1977; Taiwo, 2008; Akanin and Bilesanmi, 2011; Aderogba, 2012a and 2012b). Meanwhile, flood usually occurs when there is a continuous downpour of rain for a long period, while resulted excess water has capacity beyond what available drainage can easily convey, due to its inadequacy or blockage of the drainage. There are three schools of thought about the preponderance of floods all over the globe especially in the tropics. The first is of the opinion that there is global warming and climate change that is directly and or indirectly increasing the amount of rain and ice melting that is increasing the amount of runoff. In this case, the only source of water that results in great floods, in West Africa, and indeed, south western Nigeria, will be rain water. The second school of thought is of the view that there have been a lot of abuses heaped on the physical environment of man; and that the environment is only responding to the abuses heaped on it. The abuses include but not limited to poor planning of the physical environment, poor management of wastes, inadequate drains for the built up areas and others. The third school has it that it is the combination of global warming, climate change, and the abuses of man on the environment that are the causes of prolonged and torrential showers of rains and the resultant runoff that lead to devastating floods in America, Europe and Africa – including Nigeria; and south western Nigeria. The facts behind the three schools are yet to be thoroughly researched and confirmed,

Oriola (2007), noted that various socio-cultural activities have promoted flooding in many of the Nigerian urban environment. These activities are characterised by stream of river channel encroachment and abuses, increased paved surface and poor solid waste techniques, ineffective town planning laws and poor environmental management.

Adebayo and Jegede (2010), discovered that flooding result from excessive rainfall, blockage of natural drainage channels and the overflow of river banks. This at the moment is on the increase due to poor management of waste habit and the degree of urbanisation of cities are most important factors determining the spatial variation in the intensity of river flood in towns.

One of the consequences of global warming is raising sea levels. Studies project that by 2100, the earth' s surface temperature could increase between 1.0 and 3.5 degree Celsius. If the highest projection is reached, green land' s ice sheet probably would melt. As a consequence, the global sea levels gradually would rise as much as seven meters. He further stated that global warming has significant impact on water supplies, which are in any case becoming increasingly critical in many places. Some parts of the world is expected to become warmer and drier, especially in the summer, with a greater likelihood of droughts, in other parts of

greater incidence of flood is expected. It is also noted that rising sea levels resulting in the permanent flooding of vase area (Olugbenga et al, 2007).

Global Worming

This phenomenon results from the greenhouse effect. This is the increased global temperature which results to global climate change. The global increased in temperature resulted from human industrial and other activities (such as deforestation) that increased carbon dioxide level acting like a blanket over the surface keeping the atmosphere warmer than it would otherwise be. Scientists strongly agree that the earth' s atmosphere is becoming warmer. A long term rise in the global climate could cause see levels to rise around the world and bring a number of other adverse consequences of which flood is one (Olugbenga, 2009).

According to Adeleke (1978), stated that the basic causes of urban flooding is man' s modification of the basic network and channel characteristics during the process of settlement on particular flood plain. National surface are replaced by more imperable roads and concrete, which have very low infiltration capacity. The hydrological consequences of this is that water, which should normally infiltrate into the ground or be intercepted by vegetation and then delay for sometime before running, would be immediately available for runoff. This considerably decrease the lag time between rainfall and storm water and increase the runoff with concomitant increase in peak discharge and total volume runoff.

Falade (2003), noted that a close relationship exists between the growth of urban centre and urbanisation itself. It is regarded as a process whereby an increasing proportion of the world, nations or regions population lives in urban areas. He further stated that many factors are responsible for the motion of people to a particular region within a geographical location. Some of these factors include education, employment, business and housing to mention a few. These emigration factors often result to over urbanisation which constitutes a " STRIKE BACK" effect on the environment. As a result of the attraction of people to a particular geographical region, as time goes on, there will be serious competition on various ways by which land can be put to use leading to urban growth that has no regard for those factors that cause flooding such as drainage system, dumping of wastes into water channels and poor urban planning.

Oyesiku (1998), opined that lack of current base maps or land use development plan is a major constraint to physical planner in public service hence, has contributed significantly to the challenges being faced by them.

Furthermore, few current base maps at public planning offices show lack of rational and systematic classification and recording of land and space uses. He equally identified big problem to any meaningful data collection and data processing for land use study analysis. To this effect, desk information on the land use along the flood prone area in the metropolis was on up heal task and poses greater challenges to physical planners in time of emergency situation such as flooding.

Ogunyemi (2002), noted that flooding is inimical to human activities, especially when it occurs on a large scale, the significance hazardous effects of flood on the inhabitants of metropolitan areas or affected area like Ibaji in Kogi State, Ibadan, Ilorin, among others. In contrast to the devastating occurrence that are ravaging human lives and properties such as fire outbreak, land slide, earthquake, global warming and flooding which has more destructive margin that should be controlled by the three arms of government that is federal, state and local government.

UN-Habitat (2003), confirmed that there is considerable empirical evidence to indicate the flooding and poor drainage have a significant impact on the prevalence of illness and that large scale flooding may disrupts water supply and sanitation system and result in outbreak of diseases and epidemic. Flood water provides breeding places for mosquitoes that are responsible for malaria e.g. culex mosquito.

Ogunyemi (2002), observed that it is evident from research, that residence contributes greatly to flood problems because their act jeopardises the environment which attracts many people for economic, social and recreational facilities.

Oyewole (1997) mentioned double heavy maxima rainfall as causative factors of flooding in Ibadan. He further described structural and non-structural strategies for flood control. He explained structural approach to involve construction of flood walls to cordon the flow of water, reservoir to impound water and channel enlargement to give a hydraulically cross section. While non-structural strategies of land use, management include public acquisition and relocation, public information programmes and flooding insurance programme to sum flood plan regulation.

Jain and Sunils (2011), hirked lamented that natural disasters are global phenomenon, which may occur anywhere at any time. These adversely affect the lives of the people and cause considerable damage to properties, environment and infrastructure worldwide.

Natural disasters are impediments to the attainment of sustainable development. He further states that nature has its own principle and law. There violation by humans results into natural disasters whose consequences are severe. If man follows and respects the principles of sustainable development then to some

extent the natural disasters could be reduced since complete prevention and utilisation of disasters is beyond human control.

Disaster is a situation in which the normal pattern of life within a community gets suddenly disrupted due to some act of nature, and this puts the affected people into great suffering and helplessness. If the affected people are not given urgent attention in form of good, shelter, clothing, medical attention, protection and other life-sustaining requirement, situation may worsen further resulting into epidemic situation.

Consequences of global warming are as follows:

1 Rising in sea levels.
2 Abnormal rainfall pattern
3 Water supply shortage
4 Wide disparity of world food supply
5 Threat to ecosystem
6 Threat to human health
7 Frequently disasters and hazard (Olugbenga, et al, 2009).

Effects of Floods

Flood occurrence poses a lot of negative effects which are explained below:

(i) **Physical damage**: Floods can damage the structure by the force of impact, rising waters, inundation, erosion and by water borne debris. Damage is likely to be much greater in valleys than in open low-lying areas.

(ii) **Casualties and public health**: Current moving or turbulent water can knock down people and animals in relatively shallow depths. Major floods may result in large number of deaths from drowning. Slow flooding causes a few direct death but often increases the risk of snake bites.

(iii) **Water Supplies**: Open walls and groundwater supplies may be contaminated temporarily by debris carried by flood waters or salt water brought in by storm surges. They will, however, only be contaminated by pathogenic organisms if bodies of people or animals are caught in the sources or if sewage is swept in normal sources of water.

(iv) **Crops and Food Supplies**: An entire harvest may be lost together with animal feeder resulting in long-term food shortages. Most agricultural losses result from the inundation of crops. Susceptibility to inundation depends on the type of crop and duration of flooding. Large number of animal may be lost, if they are not moved to safety area. In addition there is possible loss of farm implements and seeds stocks, which may hinder future planting efforts. Floods may make the soil infertile for several years due to erosion of top soil or by salt permeation in case of coastal floods (Rana, 2009).

Damage to Amenities: Flood destroy road, pull down electric poles, demolition of building and interfere with economic activities. (Dow and Dowing, 2006 and Kersh and Simon 2005).

The effects of flood are not wholly negative as painted by many researchers, but also have its positive impact. Although flooding, generally, is a bane of most people, floods can be quite beneficial. Actually, nature benefits more from natural floods than from not having them at all (Abowei and Sikoki, 2005). The thing that makes natural floods a disaster is when flood waters occur in areas populated by humans and in areas of significant human development. Otherwise, when left in its natural state, the benefits of floods outweigh the adverse effects (Bradshaw et al., 2007). The higher the flood waters from the river, the better the harvest for that year (Bariweni et al., 2012). In the last 30 years, Nigerian cities have experienced great physical development, in terms of building, construction and reconstruction of roads, offices, markets and stores, manufacturing industries and others without any appreciable infrastructures such as drainages, roads and canals to support them (Aderogba, 2012c); and these have made floods to be a call for concern in the country. Floods experienced in Nigeria had done more harm in Nigeria without any notice of benefit. From the report of National Emergency Management agency (NEMA) in 2012, between June and September 2012, over 363 lives were lost and about 1.2 million Nigerians were displaced. The report also declared that over one million Nigerians may die due to the effects of floods before 2015, if no precautionary measures are not taken. Havoc caused by the flood incidence of Ogunpa river in Ibadan, Nigeria in 1980 are still cause of sorrow for many victims, where several lives were lost and properties worth millions of Naira went into air, people who were bourgeois became proletariat in a twinkling of an eye. There is an urgent need to evaluate the causes of flood, and also diagnose ways to avert its future occurrence in Nigeria. There are many questions that people are concerned about in Nigeria. Is government really enforcing laws guiding people from indiscriminate dumping of wastes; is it inadequate drainage facilities that are responsible for flood; are the public not well enlightened on the effects of flood while they carry out various activities that result to flood, like building along the water channels, indiscriminate dumping inter alia. This research is to answer the research question: " What are the causes and effects of flood in Apete Area of Ibadan, Oyo State, Nigeria, and proffer recommendations to avert the future occurrence of flood in the area." In attempting to answer the research questions, four objectives set for the study are to: examine the socio-economic characteristics of the inhabitants, identify the possible causes of flood, determine the overall effects of flood and to proffer solutions on how to mitigate future occurrence of flood in

the study area. 1.1 Literature Review The poor in the society have been identified to be the most of the victims of flood, by having no choice, but to end up living in flood prone areas (Lutz et al., 2008). In the view of Stephen (2011), the loos of life due to flood is lower in the developed countries compared to the developing countries. The assertions of Stephen (2011) and Lutz et al (2008) appeared to be right because in developing countries, there are absence of effective zoning regulations, flood controls, emergency response to infrastructure and early warning systems. Bangladesh is a developing country and one of the most susceptible countries to flood disasters in the world. Up to 30% of the country has been covered with flood waters. In 1991, more than 200,000 lives were lost due to flood in Bangladesh (Stephen, 2011). The poor in either developed or developing countries usually reside where the value of land is cheap, like river banks which are flood prone areas, thereby endangering their lives due to flood. Floods all over the world in the recent time have been related to the occurrence and reoccurrence of prolonged heavy rain (Welch et al., 1977; Christopherson, 1997; Action Aid, 2006; Adeaga, 2008; Aderogba, 2011; Wright, 2011; Pilgrim and Cordery, 1993). Climate change has been the resultant effect of prolonged heavy rain across the globe that usually results to floods.

Climate Change is an attributed cause of flooding because when the climate is warmer it results to; heavy rains, relative sea level will continue to rise around most shoreline, extreme sea levels will be experienced more frequently (Bariweni et al, 2012). Most of the recent deadly floods have happened where the population has increased more. Due to the population increase, there is also an increase in human settlements in floodplains (Hardoy et al., 2001; Douglas et al., 2008). Human activities such as dam construction, irrigation, bridges and others have negatively impacted on free flow of water in the drainage channels, rivers and streams. Particularly at the urban centers, construction of roads, buildings, factories, manufacturing plants, bridges and culverts, farmlands and others have reduced drainage channels and erosion passages and or diverted the natural courses of the flow of water (Aderogba, 2012). For instance, in Lusaka, the capital of Zambia, flood risk has strongly increased because of the fast growth of the city in flood prone areas (Nchito, 2007). This is also the case of Alexandria in Egypt (Klein et al., 2003), Ibadan in Nigeria also experienced great damage in 2012 flood, the Senegalese capital, Dakar, and the Burkina Faso' s capital, Ouagadougou, strongly affected by the 2009 flooding. Poorest people, in particular, often have a limited choice and ended up living in high flood risk zones, such as riverbanks and coastlines, unaware of the risk and unprepared to react to floods (Lutz et al., 2008). The case of urban flooding in Ibadan, a non-coastal city in Nigeria is a typical example of man-made flood disaster. Ibadan has been afflicted by very devastating flood incidents since 1933, when Gege rivers drowned houses of those living on its banks. During flooding water is contaminated. Clean drinking water becomes scarce. Unhygienic conditions and spread of water-borne diseases result. People, buildings, infrastructure, agriculture, open recreational space and the natural world are at risk. In extreme cases flooding may cause a loss of life. Torrential rains pushed rivers over their banks, collapsed mud houses and washed away livestock (Adelye and Rustum, 2011). The economy can also be severely affected by flooding. Businesses may lose stock and patronage. Disruption to utilities and transport infrastructure can have knock-down effects on a wider area.
Tourism, farming and livestock can equally be affected. Vital infrastructure may also be damaged or disrupted. Road links, railways, canals etc., may be blocked causing disruption to the wider transport network (Adelye and Rustum, 2011).

The beneficial effect of flood is when the river overflows, and the flood waters flow into the banks, sand, silt and debris are deposited into the surrounding land. After the river water subsided and go back to its normal flow, the deposited materials will help to make the land richer or more fertile. The organic materials and minerals deposited by the river water keep the soil fertile and productive (Abowei and Sikoki, 2005). Flooding adds a lot of nutrients to lakes and rivers which leads to improved fisheries for a few years, also because of the suitability of a floodplain for spawning (little predation and a lot of nutrients).

Fish like the weather fish make use of floods to reach new habitats. Together with fish also birds profit from the boost in production caused by flooding (Bariweni et al 2012). Flood control according to Bariweni et al (2012) refers to all methods used to reduce or prevent the detrimental effects of flood waters. Some methods of flood control have been practiced since ancient times. These methods include: Planting vegetation to retain extra water, the introduction of flood forecasting systems, the building of population awareness and preparedness, urban planning and discouragement of human settlements in flood prone areas, along with the development of local institutional capacities, are effective and socially sustainable actions that should be pursued with priority in the African continent. These actions can appreciably increase the societal capacity to cope with floods, thereby decreasing their overall impact (Giuliano et al, 2010). In Europe, remembering the misery and destruction caused by the 1910 Great Flood of Paris, the French government built a series of reservoirs called Les Grands Lacs de Seine (or Great Lakes) which helps remove pressure from the Seine during floods. In India, Bangladesh and China, flood diversion areas are rural areas that are deliberately flooded in emergencies in order to protect cities (Bariweni et al, 2012). Other methods of controlling the effects of flood include: dam construction and river defense. Dams and their associated reservoirs are designed completely or partially to aid in flood protection and control. Defenses as levees, bunds, reservoirs and weirs are used to prevent rivers from

overflowing their banks. When these defenses fail, emergency measures such as sandbags or portable inflatable tubes are used. A weir, also known as low head dam, is most often used to create millponds, but on the Humber River in Toronto, a weir was built near Raymore Drive to prevent a reoccurrence of flood damage caused by hurricane

II. Research Methodology

In every research carried out, it is always important to state the methods used in collecting relevant data, the techniques as well as the procedures employed.

In this work primary and secondary data was the procedures employed. The method or approaches used was descriptive in nature.

The research design for this study was the survey research since it is the most suitable research procedures capable of eliciting responses required in finding solution to the research problem. Questionnaire was used in the collection of data from the study population

The population for this study was drawn from the ten wards that make up the local government area (Ibaji). Two hundred and two respondents were be selected randomly from each of the ten wards for this study. Thus two thousand and twenty persons was selected for this study.

A sample is that size of the population chosen for study as a representative of the whole population. For the purpose of this study, the sample size of two thousand and twenty respondents was selected using simple random sampling technique.

Basically, two data types (primary and secondary) were utilized. Example of secondary data to be used in this study include journals, reports, internets, textbook, etc. primary data was collected in this study using questionnaire.

In bid to collect data for this research, questionnaire method was employed as instrument for data collection. The application of structured method was considered significant to probe the respondents to ensure truth and reliability in the information supplied. The mentioned instrument was used because it is concise and will facilitate the research more than any other technique in gathering the desired data for this work. In most cases the method is less money and time consuming. The method ensures greater flexibility of a research. The questionnaire was divided into or is made up of two sections; the first section contains questions on personal data while the second part dwelled on the study.

Data analysis is a very important stage of research writing. For this reason, the descriptive and inferential statistics was employed using textual and tabular presentations. The statistical methods such as mean, frequency count and simple percentage was utilised in this work.

III. Data Presentation, Analysis And Interpretation

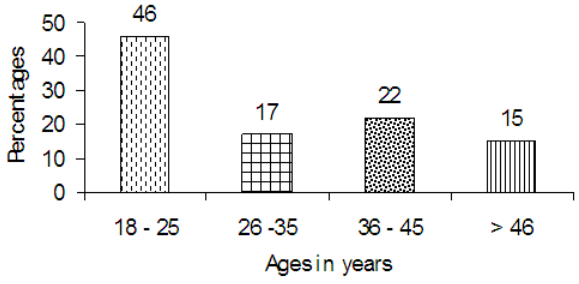
In order to achieve the objective of this study, data were presented, analysed and interpreted as gathered from the respondents.

One thousand and twenty (1020) questionnaires consisting of 24 questions were administered to the respondents. One thousand (1000) questionnaires were retrieved for analysis while 20 questionnaires were not retrieved because the respondents were not found at the time of collection.

Section A: Bio data

This section deals with the analysis of bio data of the respondents. These include, age, sex, marital status, educational status and occupation.

Figure 1 below shows that age ranges of 18 and 25 forms the majority (46%) of the respondents, followed by those between 36 – 45 (22%) and 26 – 36 (17%) respectively, while the remaining respondents (15%) were above 46 years. This is an indication that most of the respondents are middle-aged men and women in the population.



Source: field survey 2016

Figure 1: Histogram showing age distribution of respondents

Table 1: Showing sex distribution of the respondents

Sex	No. of respondents	Percentage
Male	683	68.3
Female	317	31.7
Total	**1000**	**100.0**

Source: field survey 2016

The above table indicates that the males form 68.3% of the sampled population while the rest 31.7% are females.

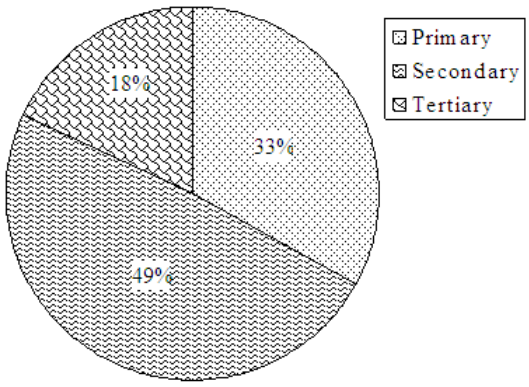
Table 2: Showing the marital status of the respondents

Marital status	No. of respondents	Percentage
Married	707	70.7
Single	293	29.3
Divorce	—	—
Total	**1000**	**100.0**

Source: field survey 2016

From the above table, it can be deduced that 70.7% are married leaving 29.3% either as bachelor or spinsters.

Figure 2: Pie chart illustrating the educational status of the respondents



Source: field survey 2016

A breakdown of the responses show that 49% of the population were school certificate holders (WASC/SSCE), 33% were primary school leavers while 18% of the population were able to attend higher institution.

Table 3: Explaining occupational status of the respondents

Occupation	No. of respondents	Percentage
Farming	660	66.0
Student	195	19.5
Civil servants	121	12.1
Business	24	2.4
Total	**1000**	**100.0**

Source: field survey 2016

The table above shows that majority of the population were farmers having the highest percentage of 66% followed by students who were just 19.5% of the population.

SECTION B

This section deals with the questions raised in the questionnaires arising from hypotheses.

Question 6: Have you ever witnessed flood disaster before?

Table 4: Below shows responses from the respondents

Responses	No. of respondents	Percentage
Yes	854	85.4
No	146	14.6
Total	**1000**	**100.0**

Source: field survey 2016

The analysis here revealed that majority of the population have witnessed flood disaster before.

Question 7: How many times have you witnessed flood disasters?

Table 5: Showing number of times respondents witnessed flood disasters

Responses	No. of respondents	Percentage
One	732	73.2
Two	171	17.1
Three	97	9.7
Above	_	_
Total	**1000**	**100.0**

Source: field survey 2016

From the above table, it is noted that September 2012 flood drew the attention of the populace more than other flood that has occur. Personal observation shows that flood is a yearly phenomenon in the study area.

Question 8: Are flood disasters traceable to human activities?

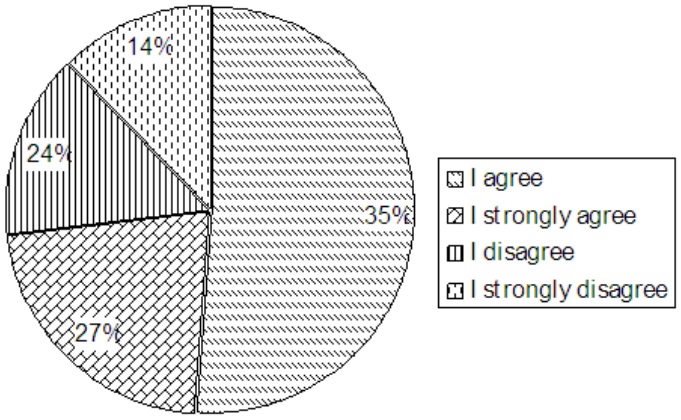
Table 6: Showing whether flood disasters is traceable to human activities

Responses	No. of respondents	Percentage
Yes	707	70.7
No	293	29.3
Total	**1000**	**100.0**

Source: field survey 2016

The above table confirmed that 70.7% of the population believed that flood disasters are traceable to human activities while 29.3% cannot readily say what causes floods. This shows that people in the study area do believe that human activities can result to flood.

Question 10: Flood can also occur naturally.



Source: field survey 2016

Figure 3: Pie chart illustrates the responses of the respondents

The above figure authenticate that flood can occur naturally with 184.4^{o} (35%) and 79^{o} (27%) respectively while those that disagree with the statement were the minority in the population with the percentage of 52.7^{o} (24%) and 43.9^{o} (14%) respectively.

Question 11 dumping of refuse/waste in water channels can cause flooding

Table 7: showing response of respondents

Responses	Num. of respondents	Percentage
Yes	076	7.6
No	924	92.4
Total	**1000**	**100**

Source: field survey 2016

The table above reveals that the inhabitants of the study area do not believe that dumping of refuse and waste in water ways can cause flooding as 92.4% of the respondents says it cannot cause flooding.

Question12 erection of building along water ways can result to flooding

Table 8: showing response of respondents

Responses	Num. of respondents	Percentage
Yes	876	87.6
No	124	12.4
Total	**1000**	**100**

Source: field survey2016

The table shows that 87.6% of the respondents are of the view that building along water ways can result to flooding while 12.4% of the respondents says it donot.

Question 13: Do you think flood has any negative effect on man

Table 9: Shows the responses of the respondents

Responses	No. of respondents	Percentage
Yes	878	87.8
No	122	12.2
Total	**1000**	**100.0**

Source: field survey 2016

From the above table, it was observed that 87.8% of the respondents affirmed that flood has negative effect on human while 12.2% of the respondents could not support the claim.

Below are some negative effects of flood in the study area.

A House submerged by flood at Onyedega Ibaji

Source : field survey 2016.

The picture above shows a house flooded at Odeke Ibaji during flood disaster.

A Church Flooded At Unale Ibaji

House flooded at Unale Ibaji.

Picture Showing Damage Caused By Flood to Ibaji Major Road

Picture Showing Flood Cutting a Road in Ibaji Local Government Area of Kogi State

A farmland destroyed by flooding

Question 15: Do you think flood has any positive effect?

Table10: Showing response of respondents

Responses	Num. of respondents	Percentage
Yes	930	93
No	070	07
Total	**1000**	**100**

Source: field survey 2016

From the above table 93% of the respondents says flood has positive effect while 07% says it do not have.

Question 17: Do you think flood can increase the population of insects?

Table 11: Showing the response of respondents.

Responses	Num. of respondents	Percentage
Yes	886	88.6
No	114	11.4
Total	1000	100

Source: field survey 2016

The above table reveals that flood increases the population of insects as 88.6% of the respondents says it does.

Question 21: Did you experience any outbreak of disease during and after the flood?

Table 12: Illustrate the responses of the respondents

Responses	**No. of respondents**	**Percentage**
Yes	829	82.9
No	171	17.1
Total	**1000**	**100.0**

Source: field survey 2016

Table 8 above shows that large percentage of the respondents experienced or heard about outbreak of diseases after the occurrence of flood which represent 82.9%. However, 17.1% of the population do not experience or hear about outbreak of disease after the blood.

Question 23: Does poor urban planning has anything to do with flood occurrence?

Table 13: Analyse the responses of the respondents

Responses	**No. of respondents**	**Percentage**
Yes	732	73.2
No	268	26.8
Total	**1000**	**100.0**

Source: field survey 2016

Findings from table 9 revealed that 73.2% of the respondents noted that poor urban planning may result to flood occurrence while 26.8% of the population view it in different directions.

Question 26: Do you need assistance from the government to control floods?

Table 14: Illustrate the assistance needed from the government to control flood in the study area

Responses	**No. of respondents**	**Percentage**
Yes	951	95.1
No	49	4.9
Total	**1000**	**100.0**

Source: field survey 2016

Result from table 10 revealed that 95.1% of the population are calling on the government to assist them in the control of floods in the study area, while 4.9% of the respondents do not believe that government can control floods since it occurs naturally.

Question 27: Since we use to have fish in large quantities after flood, do we still need to control flood?

Table 15: Shows the responses of the respondents

Responses	**No. of respondents**	**Percentage**
Yes	927	92.7
No	73	7.3
Total	**1000**	**100.0**

Source: field survey 2016

The study shows that 92.7% of the population valued control of flood than large quantities of fishes available after floods, while 7. 3% of the respondents in the study area stand in doubt of option to take.

Question 28: Do you think that there are precautions to mitigate the occurrence of floods?

Table 16: Revealed the responses of the respondents

Responses	**No. of respondents**	**Percentage**
Yes	707	70.7
No	293	29.3
Total	**1000**	**100.0**

Source: field survey 2016

The analysis from table 12 revealed that 70.7% of the population are aware of what to do to mitigate the occurrence of floods in the study area while 29.3% of the respondents are ignorance of what can be done to mitigate flood occurrence.

Question 30: Do you believe that if all the precautionary measures against flood disasters are obeyed, it will boost the economy of the nations?

Table 17: Shows the responses of the respondents

Responses	No. of respondents	Percentage
Yes	781	78.1
No	219	21.9
Total	**1000**	**100.0**

Source: field survey 2016

The above analysis reveals that 78.1% of the population believed that if all precautionary measures against floods are adhered to, the incidence of flood disasters will be reduced to the beeriest minimum, while 21.9% of the respondents believed that flood is a natural disaster from God.

IV. Findings

The findings in this study include the following:

1 Construction of structures such as houses, and fish pond along water ways hinders the free flow of water when it rains, and river overflow its bank result to flooding which cause a lot of damage to infrastructure, properties and loss of human live.

2 Poor and inadequate drainage system on roads is one of the causes of flooding in the study area.

3 Indiscriminate dumping of refuse into drainage and river especially polythene bags, (when it rains people come out to throw their refuse into flowing water body)is a factor that encourage flooding

4 Inadequate development plan to guide the growth and development of the area. From table 9, it was noted that 93.2% of the respondents confirmed that houses were built without building plan. This prevents the easy flow of water when it rains.

5 It was gathered that the residence were waiting for the government to control flood for them. Table 10 justified that claim when 95.1% of the respondents says they need assistance from the government for flood control.

6 The occurrence of flood in the study area is part of manifestation of climate change and its attendant impacts.

7 Some of the respondents are yet to comprehend the relevance of flood control measure to salvage flood problems, low level of awareness on flood control measures.

8 Infrastructural damage such as electrical poles causing disruption of electricity.

9 Some of the farmland was rendered useless after the flood.

10 Road damages disrupting economic activities i.e. movement of people and good to the market.

11 Flood increases the population of mosquitoes in the study area and reduce the population of house fly, cockroaches and house cricket.

12 Malaria fever, dysentery, typhoid fever, are common diseases suffered by the inhabitants of the study area during and after flood

The researcher noted food shortage in the study area as well as high cost of available commodities

V. Summary, Recommendations And Conclusion

This chapter presents the summary, recommendations and conclusion.

5.1 Summary

Flood disasters is no longer a new phenomenon with it attendant destruction of lives and properties. Sometimes it is predictable but to what extent the harm and destruction will occur can only be best imagined. Though flood occurs naturally but human activities influence the occurrence. According to table 6, 70.7% of the population agreed that flood disasters are traceable to anthropogenic activities. All human causes can be prevented through sustainable development approach, a sustainable development should be able to provide facilities that will avert or curtail any disaster that may result thereby. To achieve this goal, there should be conceptual frameworks such as good urban governance, town planners must pen their eyes and never slack in the responsibilities of making sure that houses are constructed according to the building regulation, drainages that can accommodate large volume of water should be constructed. From the analysis in table 5, only 9.7% have witnessed flood disasters before 2012, flood disasters in the study area. Since complete prevention of flood is not feasible, precautionary measures that mitigate the severity of damage should be advocated.

5.2 Recommendations

Changes must be implemented to reduce a community' s vulnerability to flood damage. Based on the above findings, the following recommendations were made to cushion the effects of flood in the study area, short and long term policies were recommended respectively.

Short term policy

The following short term policies were recommended:

1. There is need for a well-articulated and comprehensive planning of various aspects of the study area land use activities so as to guide against haphazard development as well as the prevention of the causes of flooding in the study area (Ibaji). Also there is need for action to be taken in design and enforcing relevant environmental policies and measures that will minimise the impact of flood on the area.
2. Enlightenment programmes should be organised periodically for the inhabitants in the study area, on the causes, effects and possible preventive measures of flooding. Keeping them informed of what to do during the raining season and to always keep their environment clean. Appropriate environmental law should be put in place to prevent indiscriminate dumping of refuse on drainage channels as well as bringing offender to book through creation of mobile court to try and punish whoever abuses the environment.
3. Priority should be given to building of houses, structures and construction of road networks, so as to ensure compliance and non-stretching of development activities beyond the unit by government. Developer and individual should put measures to prevent possible room for flood problem in the future. The need for comprehensive approach to tackle drainage problem in the study area cannot be overemphasised. Drainages that are too narrow and are checked up by debris and weeds should be evacuated, expanded and degraded.
4. Tree planting in the environment is of great importance to control flooding: rainstorms and ocean surge, tree planting should be encouraged and there should be demolition of structures within the flood prone areas and rivers setbacks which obstruct free flow of water.
5. Existing channel improvements. Deepening and widening the river bed are methods to increase capacity and thus reduce the area of the flood plain.
6. Diversion and relief channel construction. New channel construction may be feasible relative to the cost of moving a settlement. Several options exist for channel construction such as open grass-lined channels, concrete or rock lined channels, great care must be exercised in the design and construction of diversion channels because of the possible environmental impacts and necessary safety features.

Long Term Policy

1. National Level

Considering the magnitude of destruction of flood its solution should be the responsibilities of all tiers of government; therefore, the Federal Government (FG) should be actively involved in solving flood problem by preparing National Physical Development Plan (NPDP) which will articulate and identify notable floodable areas. Knowing fully that government at all levels are concerned with safety of lives and properties, hence Federal Government should see flood problem as a national issue that need to be primarily involved. This will help to formulate policies and programmes on physical planning for the entire nation and also provide a framework for all other states on flood problem and disaster associate occurrence.

2. State Level

At State level (Kogi State) should prepare a state physical plan for a comprehensive and sustainable location of streams, rivers, flood plain towns and villages for the purpose of determining its nature flood prone areas, seasons and workable preventive measures for tackling flood disasters.

3. Local Government level

Local Government (Ibaji) should prepare a comprehensive master plan for its major towns and villages as specified in urban and regional planning law, No. 88 of 1992. No development permit should be granted in areas observed to be flood prone during the plan preparation.

5.3 Conclusion

Devastating effects of anthropogenic causes of flood in Ibaji have motivated the study of this research topic. Floods generally are predictable; this makes them different from other natural disasters, such as earthquake. Therefore, they are preventable if there is pragmatic efforts and adequate plan ahead of them.

In a rational approach, the adverse effect of flood on socioeconomic and physical environment should not be allowed to be recurrent and become a yearly ritual in the study area. To a greater dismay, one wonders that upon media propaganda not to dump refuse in the stream and drainage, at time telling those who live close to the river to run away for their dear lives, yet people seem not concerned. The recommendations earlier advanced will determine the success of this project, more studies need to be carried out in the areas of flood forecast and preventions. Beyond reasonable doubt, if all the recommendations are implemented, the persistence of flood disaster will be eliminated or be a thing of past.

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