

Research Article

Assessment of The Impacts of Flood on The Socio-Economic Activities in Atan Offot And Its Adjoining Communities, Uyo, Akwa Ibom State-Nigeria

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Abstract

The study examined the effects of flood on the socio-economic activities of residents of Atan Offot and its adjoining communities, Uyo, Akwa Ibom State-Nigeria. A sample of 168 households consisting of males and females participated in the study. Data were gathered using an interview schedule and a questionnaire. The questionnaire measured demographic variables and impacts of flood on socio-economic status such as housing, property/assets, agriculture, education, health, water/sanitation, and transport system. From the study, 24% of the sampled household lost their homes, 87% indicated their crops were damaged and 52% indicated that flooding had negative impact on their main source of drinking water. It also showed the vulnerable groups and coping strategies of the people of Atan Offot and its environs. The study found that the flood had a negative impact on the socioeconomic well-being of the locals and that the majority of their coping mechanisms were insufficient. It is advised that all parties concerned assist the locals in moving to less/non-flooding prone areas and providing the necessary utilities and introducing them to alternate means of subsistence. It is important to find a long-term solution to the problem of food insecurity brought on by flood damage like cultivating on higher grounds and making sand banks. Government entities in this area should make sure that homes are constructed farther from areas susceptible to flooding and using high-quality building materials. To help the residents return to normal, all damaged amenities should be repaired by the government through agencies charged with the responsibility.

Keywords: Flood; Rainfall, Climate, Environment, Socio-Economic, Residents.

1. Introduction

Floods are natural events where a typically dry area or piece of land suddenly submerges under water [1]. Floods are one of the most common natural disasters worldwide [2]. They can occur in many different parts of the world and can be caused by a variety of factors, including heavy rainfall, melting snow, rising sea levels, and the failure of man-made structures such as dams or levees [3]. Floods can cause significant damage to homes, businesses, and infrastructure, as well as pose a risk to human safety.

About 2.8 billion people are affected by floods worldwide, which have caused over 200,000 fatalities over the past three decades [2]. According to the Sendai Framework for Disaster Risk Reduction 2015-2030, four priorities for action to prevent new and reduce existing disaster risks were established to include: understanding disaster risk; strengthening disaster risk governance to manage disaster risk; investing in disaster reduction for resilience and enhancing disaster preparedness for effective response. Environmental dangers like flooding are not a recent occurrence. What is

novel, though, is the growing severity of the harm done to people and property as a result of the large-scale and frequently occurring floods observed in developing nations like Nigeria. Studies on water, poverty, and flooding have noted an increase in flood frequency and intensity in recent years, which has had an impact on agriculture, health, and education as well as resulted in fatalities, injuries, and homelessness [4-6]. The devastation caused by flooding in Nigeria in recent years got so extreme that it was regarded as a national disaster. Akwa Ibom State was one of the 34 states out of the 36 in the nation to suffer the most from the flood [7].

In Nigeria, flooding is the most frequent disaster [8]. The majority of Nigeria's states experience annual flooding during the rainy seasons more frequently as a result of more precipitation connected to climate change [9]. Rainfall flooding, unlike some other natural disasters, may be managed with careful planning and the installation of the required infrastructure [10, 11]. The majority of Nigeria's flooding is caused by human activity, with current subpar urban planning techniques and a lack of or insufficient environmen-

tal infrastructure both contributing to and aggravating the problem. For instance, the lack of a national Flood Risk Management (FRM) plan or thorough flood risk maps are signs that the flooding issue in Nigeria is not being given enough attention [8]. This shows that developing and putting into practice suitable flood risk management techniques, which include sound spatial planning and infrastructure, would help control the floods that negatively affect Nigeria's sustainable development [12].

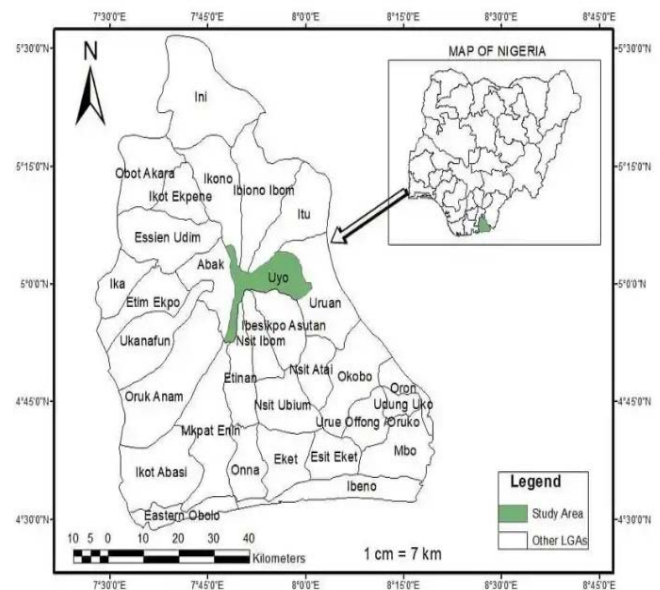
Urbanization, which led to significant alteration of the natural environment in an effort for man to achieve a particular level of comfort, can be blamed for the flooding in Uyo [13, 14]. Flooding has caused several environmental and health problems in Atan Offot and its neighboring settlements, including the loss of arable soils, a decline in soil productivity, deterioration of water quality, ground and surface water contamination, water and airborne diseases, and fatalities [15, 16]. The approach to this study is the frequency and severity of occurrence, and the ways in which communities have adapted to and managed them over time. The primary source used field observations, an interview schedule, and the administration of questionnaires. Data that was taken from journals and other secondary sources was used to create secondary data. The majority of the information used in the data analysis came from the copies of the questionnaire that were collected from the respondents and from the scheduled interviews with some stakeholders. Descriptive statistics were used to analyze the data, including percentage, frequency, tables, etc. The data was presented further using narratives as well. The socio-economic effects of the flood in the area were therefore thoroughly investigated in this study.

1.1. Study Area

The area of landmass covered by Uyo Local Government Area is roughly 606.1 square kilometers with coordinates 5°10'0"N 7°59'0"E. Geographically, Uruan Local Government Area borders Uyo on the east, Abak Local Government Area borders Uyo on the west, Ikono, Ibiono Ibom, and Itu Local Government Areas border Uyo on the north, and Nsit Ibom, Etinan, and Ibesikpo Asutan Local Government Areas border Uyo on the south.

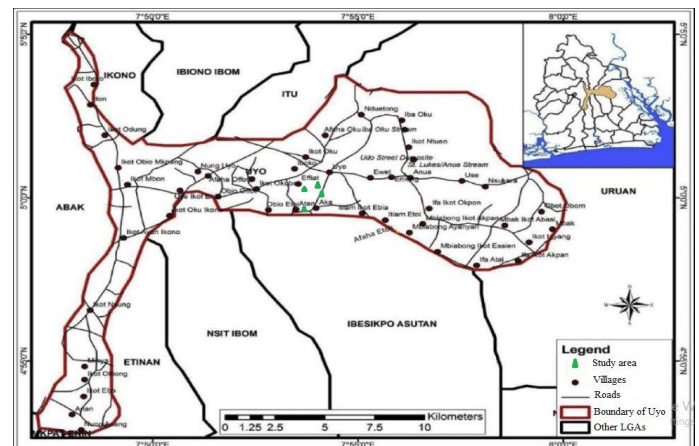
Atan Offot is a village located in Uyo, Local Government Area of Akwa Ibom State, South-south, Nigeria. The actual area for this work lies within coordinates 5°01'12" N 7°53'58" E. This was measured utilizing a global positioning system (GPS). The pattern of rainfall is bimodal. Rainfall starts in mid-March and ends around mid-November, with a brief dry spell in August known as "the August break." The average annual rainfall during the rainy season is typically high, ranging from over 3500 mm by the coast to over 2000 mm inland. The mean annual temperature is between 26 and 28°C during the dry season, which begins in November and lasts until February or March. Between January and February, when the sun is directly overhead, the temperatures are at their maximum. 75 to 90% relative humidity levels are typical, which are relatively high. Over eighty percent (80%) of Akwa Ibom State is made up of alluvial deposited sands

and clays, which together make up the Benin Formation, also referred to as "coastal plain sands."



(Source: Department of Geography, University of Uyo, 2017)

Figure 1: Map of Akwa Ibom State showing Uyo Local Government Area



(Source: Department of Geography, University of Uyo, 2017)

Figure 2: Map of Uyo Local Government Area showing the study area

2. Methodology

For this study, data were collected from both primary and secondary sources based on the relevance and ethical considerations of the study area being addressed. The primary source used field observations, an interview schedule, and the administration of questionnaires. Data that was taken from journals and other secondary sources was used to create secondary data. The target population consists of those who live in the study area. Adults who were at least eighteen (18) years old were the primary target. There were 200 households in the sample. Only 168 of the 200 questionnaires sent to the respondents could be retrieved at the time of retrieval and used for the study since some of them had been improperly filled out. This accounted for around 84%. The majority of the information used in the data analysis came from the copies of the questionnaire that were collect-

ed from the respondents and from the scheduled interviews with some stakeholders. Descriptive statistics were used to analyze the data, including percentage, frequency, tables, etc. The data was presented further using narratives as well.

The research design objectives are:

- To identify the impact which floods have had on the socio-economic activities of the people of the study area.
- To establish and analyze the underlying causes of floods in the area.
- To identify coping mechanisms employed by the community during floods.
- To suggest possible control/management measures.

3. Findings and Discussion

3.1. Household Demographics

Out of the 168 households sampled for the study, 69% had a male head of household, and the remaining 31% had a female head of household. Additionally, 67% of the heads of households were married while 15% were widowed and 2% were single home heads. The results of the study indicate that the majority of household heads were between the ages of 40 and 49, followed by those between the ages of 60 and 64, as indicated in Fig. 3.

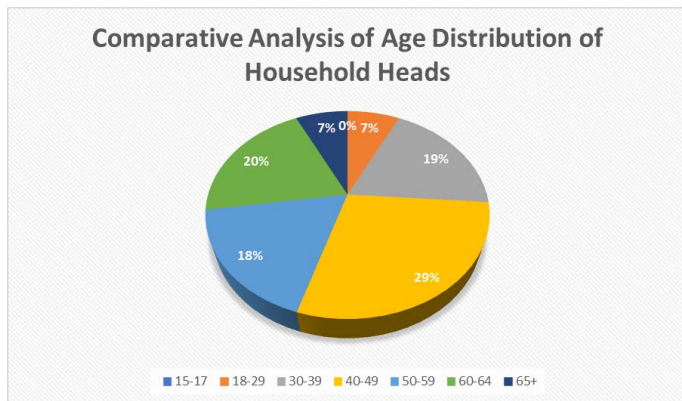


Figure 3: Comparative Analysis of Age Distribution of Household Heads

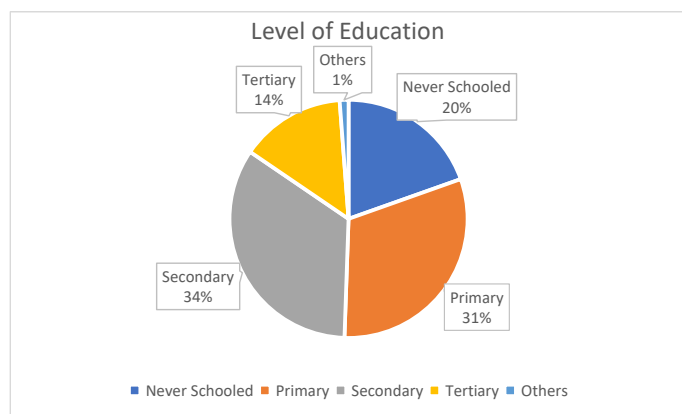


Figure 4: Level of education of respondents

From the data above, it is crystal clear that adults in their productive age (18–49 years), which form 55% of the respondents, are affected by the flood. This will impact negatively on the economy of the study area most especially when a large percentage of the respondents are self-employed or not employed.

3.2. Educational Level of Respondents

About 20% of the respondents from the 168 households sampled were not educated. 31% of them attained primary school education, 34% attained secondary school education, 14% attained a tertiary education and 1% attended other kinds of educational institutions. This implies that 31% of those who attained primary school education might not access to secondary school education due to the damages caused by flood on school buildings, roads etc.

3.3. Source of Livelihood

Table 1 revealed that the first most important livelihood source of the sampled communities was farming (45.2%) followed by those that made ends meet via other means other than farming, business and civil service jobs (28.6%). The percentage of those engaged in business and civil service were relatively low (19.1% and 7.1% respectively). The implication is that since farming is their major source of livelihood and food, increased exposure to floods will exacerbate their vulnerabilities by compromising their household food security.

Table 1: Source of livelihood of respondents

Source of livelihood	Frequency	Percentage (%)
Farming	76	45.2
Business	32	19.1
Civil Servants	12	7.1
Others	48	28.6
TOTAL	168	100

3.4. Impact of Floods

Housing: From the analysis, twenty four percent (24%) of the respondents lost their homes as a result of damage from flood. These houses were built using mud for the old ones, and blocks for recent houses which are scattered settlements, built along water channels and flood plains. Out of this 24%, 68% were male and the remaining 32% respondents were females. Furthermore, from those whose houses were affected by flood, 62% of them were married and 12% were widowed and together they made up the greater number of those whose houses were damaged by flood and they may not be able to be integrated into other homes that were not affected by the flood. Reason being, they have a relatively sizable family. According to information acquired from the interview, it was discovered that even though they were merged into other homes, the original occupants of these homes had discomforts as a result of their small room sizes and resource sharing. Some of the afflicted locals even leave their homes temporarily and move to new locations. All of these disrupted their life pattern and social networks.

3.5. Property/Assets

From the research, it was revealed that a substantial number of household items were lost/damaged by floods. Most noticeable included items such as: beds (12%), radios (14%), televisions (3%), and chairs (15%). About (24%) indicated that they lost other property such as clothes, shoes, jewelries, kitchen utensils, etc. The proximity of the homes to

flood-prone zones was blamed for the majority of the losses of these assets. This posits the “Disaster Crunch Model” which shows that vulnerability (pressure), is rooted in socio-economic and political processes (Blaikie et al. 1994; Wisner, et al. 2003). Discussions with the locals indicated that some households indirectly lost their assets because some of their income sources were disrupted when their homes collapsed. They were compelled by this to sell some of their assets in order to raise cash for other essential expenses. Furthermore, due to inaccessible access routes and constant stagnant water on the land, several of their landed properties lost value.



(Source: Researchers' fieldwork, 2022)

Plate 1: Assess road to homes and shops impassable

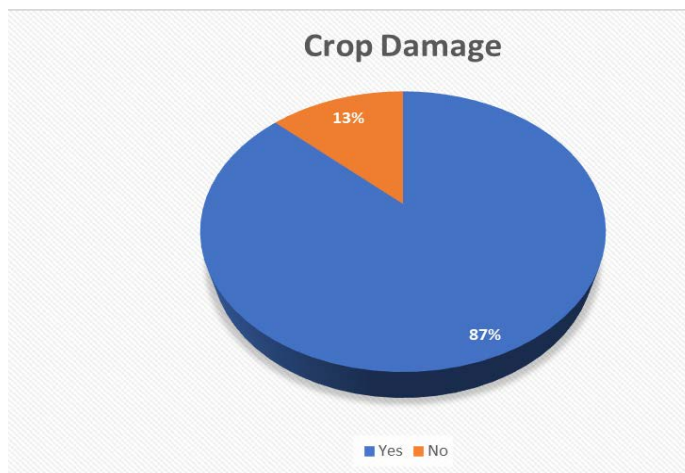


Figure 5: Crop damage resulting from flood



(Source: Researchers' fieldwork, 2022)

Plate 2: Flood in the area devaluing land use

3.6. Agriculture

An alarming 87% of respondents said floods had damaged their crops by physical damage, soil erosion and polluted water. According to the respondents who reported agricultural damage due to flooding, maize, made up 90% of the damaged crops and this was their main staple crop. Their main source of livelihood, which is agriculture, was clearly severely impacted by the flood. Additionally, 27% of the 168 studied residents reported that flood had at some time caused them to lose food supplies. 91% of these people lived in flood-prone regions in the community.

3.7. Education

The 168 sampled homes in their entirety reported having access to educational resources in their community. 14% of the studied families said that flooding in some manner had a negative impact on school infrastructure.

Furthermore, 44% of the studied homes indicated that flood at some point prevented their children from going to school. These children spend almost eight weeks due to large volume water filling the access roads as well as classrooms. 34% of respondents said the disruption was brought on by an impassable road, 5% said it was due to submerged school building, and 3% indicated that it was parental or guardian restrictions out of concern that the children may drown in the flood.

3.8. Health

Most of the sampled homes (90%) said that there were health facilities in the study region, according to the research. Also, just 4% of the data indicated that floods had in some manner damaged health facilities like the community health centre. The study further revealed that 23% of the studied households had trouble getting to medical facilities at times because of obstructed health care routes. Due to a lack of access to necessary medications and the stagnant water serving as a breeding ground for some insects like mosquitoes, disruptions in the availability of health services meant an increase in the prevalence of diseases.

The study also found that, of the 168 families that were sampled, 68% reported that at least one member of their household fell ill as a result of the floods. The most common illnesses among the studied families during the floods were Malaria/fever (62%), diarrhea (16%), cough (14%), measles (6%), and others (2%) (see Fig. 7).

3.9. Water and sanitation

Various sources of drinking water were mentioned by households in the research area. It was clear that boreholes (91%), protected wells (6%) and unprotected wells (3%) were the most popular water sources in the research area (see Fig. 8). 52% of the families in the examined group further indicated that flooding had a negative impact on their main source of drinking water.



(Source: Researchers' fieldwork, 2022)

Plate 3: Assess route to an educational facility

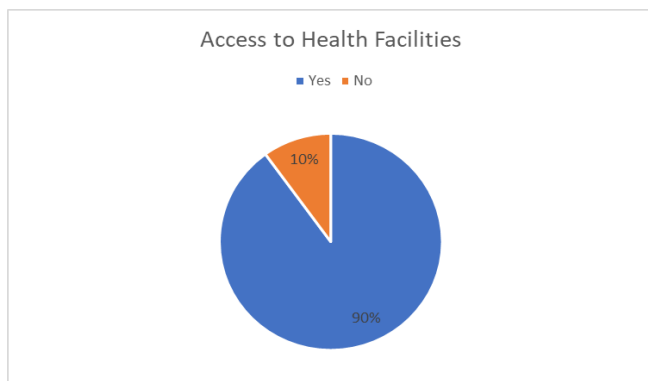


Figure 6: Access to health facility

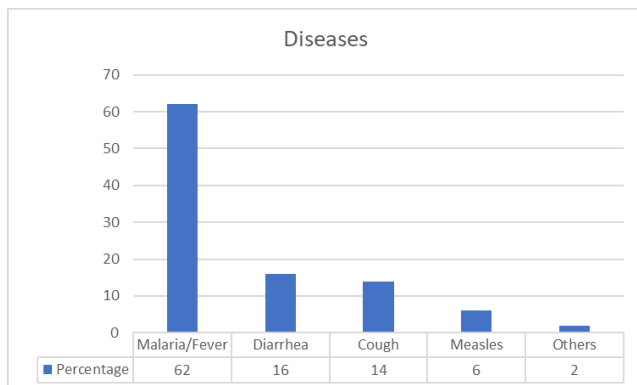


Figure 7: Distribution of diseases

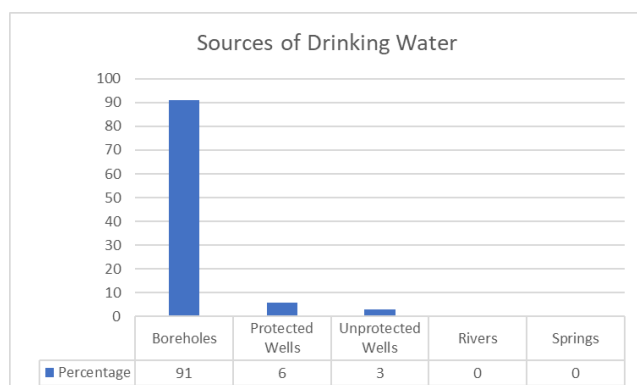


Figure 8: Most common water sources for drinking for sampled Households.

In terms of sanitary facilities, 58% of the studied households agreed that they had access to good sanitary facilities, while the remaining 42% did not. As alternatives, they frequently used gutters and bushes. Despite being employed as options for excreta disposal, gutters and bushes are not considered to be sanitary facilities in the context of sanitation. 26% of the households that said they had sanitary facilities also said that floods have occasionally destroyed those facilities requiring them to also use gutters and bushes as places to dispose of human waste. The implication of this is the rise in pollution and diseases.

3.10. Transport system

The flood impacts on transportation as indicated by the people in this area have far reaching consequences. 100% of respondents in the study revealed that road transport system is the only means of transportation in this area and the transportation network is affected because most of these roads are usually flooded. This drastically disrupts movement of people with their goods/services.

Further interview revealed that major roads in the study area (IBB way, Atiku Abubakar road, Abak road) that leads to both the federal and state secretariats and serve as link to other nearby local government areas are usually affected by the flood making it challenging for civil servants, passengers and other road users to get to work on time nor go about their legitimate business with ease. Also, motorists tend to use alternative routes to their destinations hereby clogging up smaller streets with traffic and over usage over time wears down these roadways. All of these have a significant socioeconomic impact on these residents and influence their daily lives.

3.11. Vulnerable Groups

The study found that the majority of the population in the study area were vulnerable to flooding for a variety of underlying reasons like the geology and geography of the region, land use and development, inadequate or poorly maintained infrastructure and lack of preparedness. Living in a flood-prone area, according to 47% of the studied households, was the primary contributing factor to their vulnerability to flooding, followed by poverty (17%) and a lack of alternative livelihoods (8%).

ACCESS TO SANITARY FACILITY

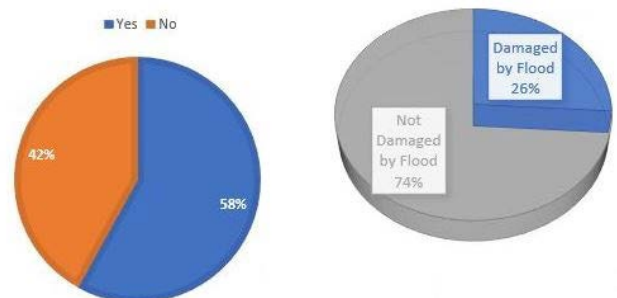


Figure 9: Access to Sanitary Facility and the % of Damaged Caused by Flood



(Source: Researchers' fieldwork, 2022)

Plate 4: Flood disrupting means of transportation along IBB Way

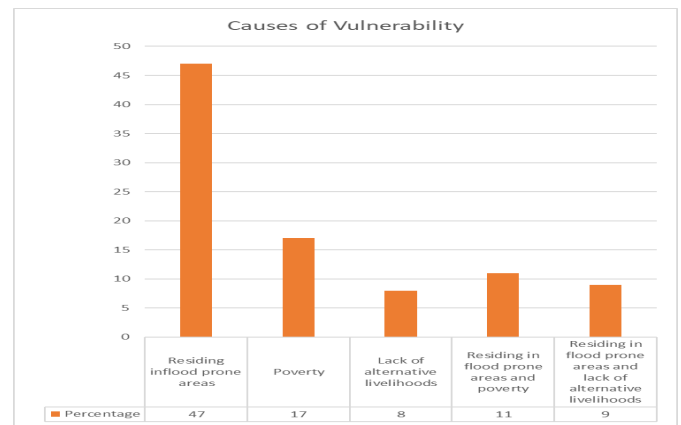


Figure 10: Underlying causes of vulnerability for the sampled households

Table 2: Coping mechanism of respondents

Coping strategy	Frequency	Percentage (%)
Cultivating on higher grounds	49	29.2
Making local canals/water ways	28	16.6
Making sand banks	72	42.9
Building higher water preventing walls	19	11.3
TOTAL	168	100

The research further revealed that residing in flood prone areas/poverty made up 11% of vulnerability; residing in flood plain areas/lack of alternative livelihood sources made up 9%; poverty/lack of alternative livelihood sources 5%; while all the three causes of vulnerability accounted for 3%. From the study, it is clear that improving household resilience to flood effects through efforts to combat poverty and support a variety of livelihood opportunities is crucial in these regions. This will ultimately reduce levels of vulnerability.

3.12. Coping Strategies

The study found that the sampled homes used several flood-related coping mechanisms. The most significant coping mechanisms used were growing on smaller plots on higher grounds (29%), creating local waterways/canals (17%), creating sand banks (43%) and building high preventive water walls (11%) (See Table 2). 76 out of the 168 studied households said these coping mechanisms weren't very successful as it may be too severe, the response may be slow or inadequate, resources may be limited, or people may have difficulty accessing aid and support. Additionally, many people who have lost their homes and possessions may experience psychological distress such as anxiety, depression, and post-traumatic stress disorder.

4. Conclusion

The study found that residents of Atan Offot and its adjoining communities had negative effects from floods on their socioeconomic activities. The study also confirmed that the pattern of settlement which are scattered and clustered is significantly influenced by the source of one's livelihood.

Additionally, the various underlying factors that contribute to household vulnerability were explored, and potential difficulties in mitigating this susceptibility were evaluated as stipulated in the Disaster Crunch Model. The study also showed the connections between floods in one area of society and those in other sectors. The various sectors discussed were housing, property/asset, agriculture, education, health, water and sanitation.

The study has found that various households handled flood damage in different ways like using sand bags, building and planting on highlands etc. It is clear from the interviews and discussions with several community stakeholders that the impacted household's coping mechanisms were not long-term solutions or were not sustainable to help them better their living circumstances.

It is important to take preventive measures and preparation before the flood happen, thus, the community can minimize the impact, and the coping mechanism will be more effective.

4.1. Recommendations

All parties (Environmental Regulatory bodies and the government) involved should encourage the residents of this area to relocate to less/non-flood prone areas, providing them with all necessary amenities and introducing them to alternate means of subsistence. Agriculture sector stakeholders should motivate and assist the populace in finding a long-term solution to the problem of food insecurity brought on by floods. Governmental entities in this area should make sure that homes are constructed farther from areas suscep-

tible to flooding and using high-quality building materials. To channel and contain surplus water, proper drainage and canal construction are required. Finally, to help the residents return to normal, all damaged amenities should be adequately planned and structured to checkmate the effects of floods in the study area.

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