AN INVESTIGATION OF 2017 FLOODING EVENT IN NASARAWA HAYI IN NIGER STATE, NIGERIA

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ABSTRACT

Floods are among the most devastating natural disasters in the world, claiming more lives and causing more property damage than any other natural phenomena. Nassarawa Hayi have had incidences of flash floods in the pasts, the experienced of 2012 floods in the area has not been witnessed in its recent history. This study investigates the factors responsible for flooding in the area. Quantitative and qualitative data techniques were used. Structural questionnaire and personal observation were made in the study area. Descriptive statistics was used to analysis data collected from the field. The findings show that Nasarawa Hayi is flood prone area and people within the areas are at risk of flood at any time. It also reveals that proximity to the flood prone area is the major cause of floods in the area. The study concludes that floods in area resulted in to displacement of people, food security, waterborne disease, agriculture loss and adverse on socio economic of the people in the area. Thereby

Introduction:

In Nigeria natural hazards of the environment have been making front page news, with increasing frequency, wreaking havoc either on rural farmers or on urban residents. So, the need for in-depth research into the impacts of floods on the environment and socio-economic activities arises. Floods may be defined in a variety of ways according to type, origin and magnitude. According to NEST (2015), a flood is a body of water which rises to overflow land which is not normally submerged. This may result in major disasters involving structural and erosional damages, disruption of socio-economic activities, transport and

recommends that Government and key Stakeholders should engage the communities in making them aware of the flood risk in view of the climate variability.

Keywords: Floods, Factors, Risk and Vulnerability

Communication, loss of life and property, contamination of water and the environment in general.

Kirkby (2006) sees flood as existing when the discharge of a river or water course cannot be accommodated within the margins of its normal channel, so then water spreads over adjoining grounds on which crops or valuable properties are destroying; a flood is any water in an area that is not normally submerged. Brown and Cutchen (2012) have observed that the real cause of a flood is man. They said because of his desire to make money quickly or through his lack of understanding of the way nature works, he tries to change the normal course that water follows across the land. Man builds dams, his home and factory in areas that are known to be in danger of flooding.

In examining the effects of flooding, Akinmade (2015) opined that natural flooding is not a problem until people choose to build their homes and other structures on flood plains. He further explained that these structures are subjected to damage and loss when inundated by floodwaters. He further stated that people have chosen to build on so many floodplains that is why flooding is the most universal natural hazards in the world. Similarly, Whitlow (2016) described floods as the commonest of the natural hazards and in recent decades have accounted for no less than 64 percent of all death tolls resulting from natural hazards. He also explained that this is the price that mankind has to pay when attempting to compete with rivers for the use of their floodplains or when building on vulnerable coastlines. This loss of life, although terrible is relatively low compared to areas of the world that lack sophisticated monitoring and warning systems, like the underdeveloped countries.

Suleja and its environs including Nassarawa Hayi have had incidences of flash floods in the pasts, the one of Saturday, the 8th of July, 2017 experienced has not been witnessed in its recent history. The flood occurred as a result of the torrential rain which lasted about 12 hours (11:00pm to 11:00am) and seriously disrupted the functioning of the town with widespread human, material and

environmental losses which exceeded the ability of the local authorities to cope with (NSUDB, 2017). The areas affected by the flood covered Suleja and Tafa Local Government Areas of Niger State. They include; Suleja (Bakin Uku area around Hairatu Gwadabe estate, Kantoma bridge area and Checheniya) and Nassarawa Hayin in Tafa Local Government Area. As the search for solution to flood hazards continues, it is essential to explore how the flood processes are shaped and threatened by the physical development pattern of Nasarawa Hayi community. It is upon this backdrop that this study attempts to investigate the factors that aggravate the 2017 flooding and its impact on relevant on human livelihood.

Study Area

Nasarawa Hayi is a community in Tafa Local Government Area in Niger State, Nigeria adjoining the Federal Capital Territory. It is located on longitude of $7^0 51$" E to $7^0 72$"E and latitude $9^0 33$" N to $9^0 51$" N with the projected population of 71,074 people as at 2014 (NPC, 2015). The geographical location of Nasarawa Hayi in relation to Niger State and Nigeria is shown in Figure 1.1, 1.2, 1.3 and the aerial photo study area shown in Figure 1.1. Taffa under Köppen climate classification features a tropical wet and dry climate. Nasarawa Hayi experiences three weather conditions annually. This includes a warm humid rainy season and a blistering dry season. In between the two, there is a brief interlude of harmattan occasioned by the northeast trade wind, with main feature of dust haze, intensified coldness and dryness.

The rainy season begins from April and ends in October, when daytime temperatures re ach 28 °C (82.4 °F) to 30 °C (86.0 °F) and nighttime lows hover around 22 °C (71.6 °F) to 23 °C (73.4°F). In the dry season, daytime temperatures can soar as high as 40 °C(104.0 °F) and nighttime temperatures can dip to 12 °C (53.6 °F). Even the chilliest nights can be followed by daytime temperatures well above 30 °C (86.0 °F) (Nasidi, 2015). The high altitudes and undulating terrain of Nasarawa Hayi act as a moderating influence on the weather of the territory in the Nasarawa Hayi reflects the territory's location on the windward side of the Jos, Plateau and the zone of rising air masses with the city receiving frequent rainfall during the rainy season from March to November every year.

Figure 1: Location of the Study Area in Tafa LGA Source: NIGIS, Minna, (2018)
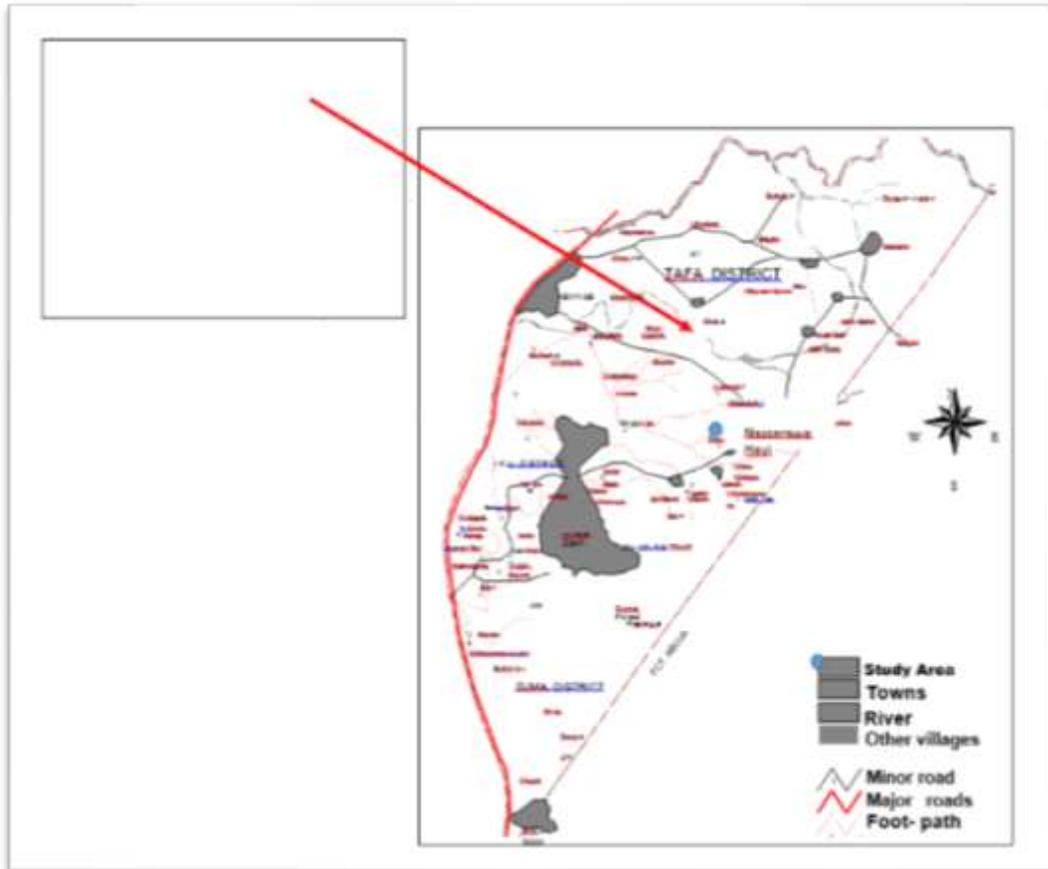
MATERIALS AND METHODS

Sources of Data
Basically, two source of data were used for this study, these are primary and secondary data. The primary data was source directly from the field through personal observation, questionnaire administration and oral interview. While the secondary data were sourcethrough journals, seminar, online Textbooks, newspapers, magazines, encyclopedia, library, etc.

2.2   Method of Data Analysis
The study will provide analysis based on its design. Descriptive statistic is the statistical methods used to identify factors responsible for flood events and

clarification of all variables in the research by using statistical package for social science (SPSS). The analysis expresses the respondent attribute and all variables that was used in the study. While inferential analysis was used to investigate the relationship and the effect of independent variables on the dependent variables.

Factors responsible for the flooding scenario in Nasarawa Hayi
Demographic Characteristics of the Respondents
Age of the Respondents

The demographic analysis of the sampled population in Nassarawa Hayi. It was observed from the analysis in Figure 2 that 17.3% of the respondents were between the age group of 20-30 years, while 12.3% were within 31-40, higher percentage of the respondents (53.7) are within 41-50 years while low percentage of the respondents (7.4) were above 51 years of age, this implies that majority were adult and responded accurately to the questions
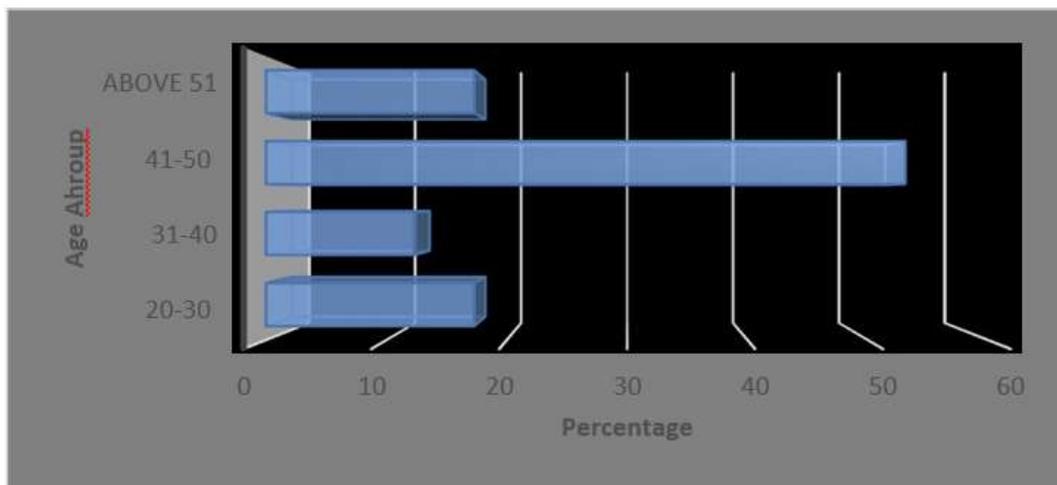

Figure 2 Age of the respondents
Source: Authors Field Survey, 2019

3.2.3 Educational Status
Educational status of the respondents was analysis in Figure 3 It shows that 33% of the respondents were illiterate that do not have any formal education at all, 47% attend primary school, 18% attended secondary school while low percentage (2%) attended up to tertiary education level. The analysis shows that majority of the respondents are literate enough to do justice to the research questions.
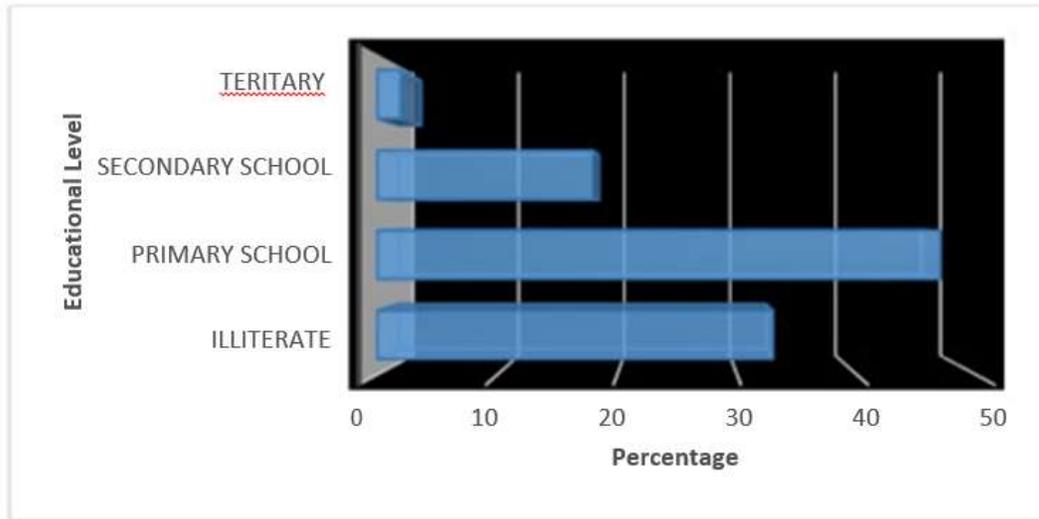
Figure 3 Educational status of the respondents
Source: Authors Field Survey, 2019

Occupational Status

Analysis in Figure 4 shows the occupational status of the respondents. It was observed that 68.2% of the respondents were farmers, 11.6% were into trading, and 13.7% were civil servant while 6.5% were artisan. The analysis indicated that majority of the respondents were farmers.
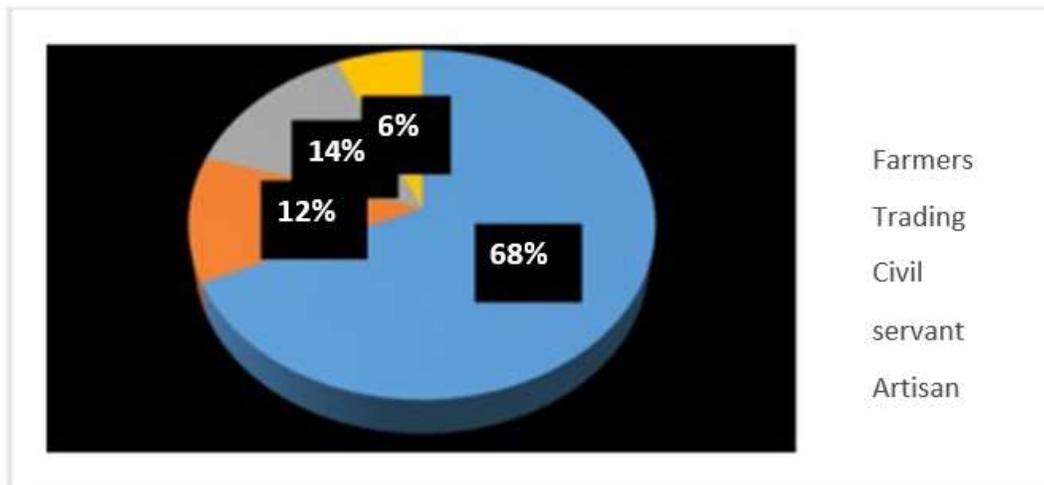

Figure 4 Occupational status of the respondents
Source: Authors Field Survey, 2019

Income Status

Income status of the respondent was analyzed in Figure 5. The analysis shows that 12.2% of the respondents earned between 5,000 - 10,000 monthly, while 3.4% earned between 10,001 - 20,000, 25.2% of the respondents earned between 20,001 - 30,000, higher percentage of the respondents (36.7%) earned between 30,001 - 40,000 while 22.4% earned between 40,001 and above.

Figure 5 Income status of the respondents
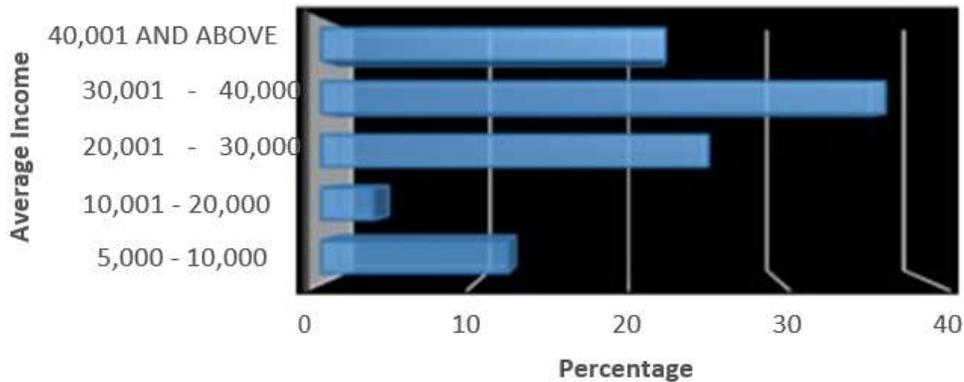
Source: Authors Field Survey, 2019

Duration of Stay in the communities

The duration of stay of the respondents in the study area was analyzed. It is indicated   in Figure 4.6 that 24.7% of the respondents had stayed in the area between 1-10 years, 19.1% had stayed between 11-20 years, 17.9% of the respondents had stayed between 21-30 years while a higher percentage of the respondents (29%) had stayed in the area since birth. This indicates that majority of the respondents have adequate knowledge of flood and it impacts.
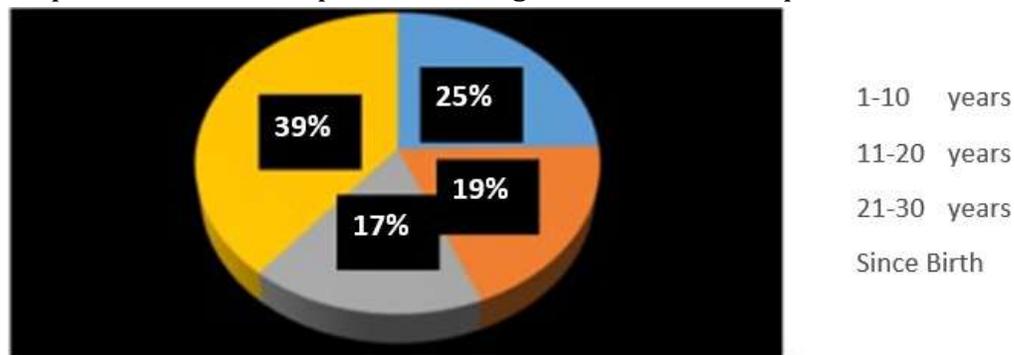

Figure 6 Duration of stay   Source: Authors Field Survey, 2019

Flood Experience

On Issue of flood experience of the respondents was analyzed. It was observed in Figure 7 reveal that higher percentage of the respondents (81.6%) has experienced flood disaster in the area while 18.4% of the respondents have not experienced any flood in the area. It shows that the area is flood prone area and people within the areas are at risk of flood at any time.
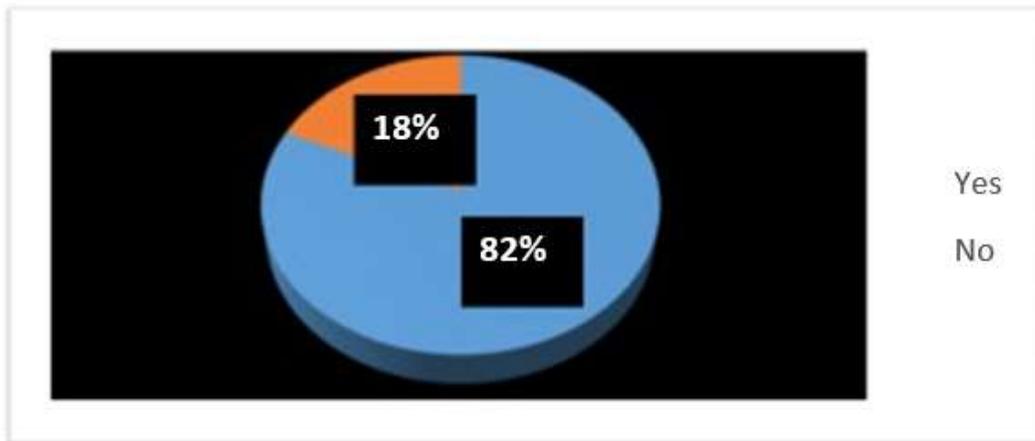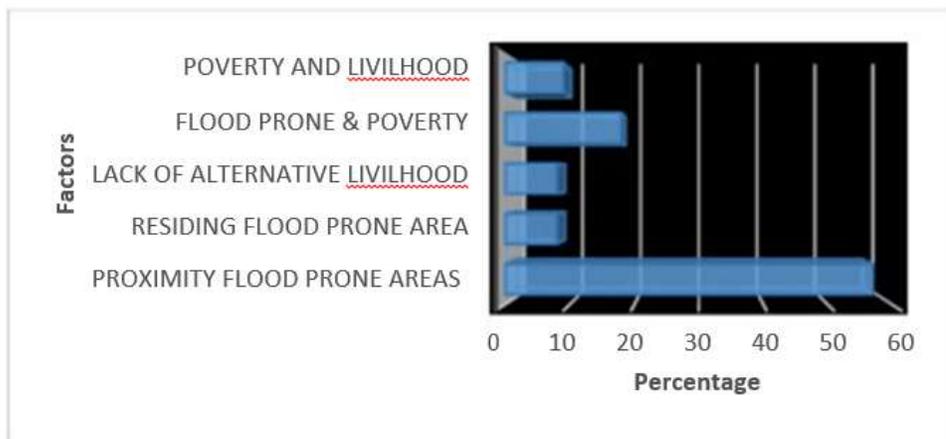

Figure 7 Experience of flood in the areas
Source: Authors Field Survey, 2019

Factors Responsible for flood scenario in Nassarawa Hayi

There were varying underlying causes of floods in Nassarawa Hayi, it was observed that among the underlying courses of flood is proximity to the flood prone area (57%), while residing in flood prone area and poverty (8%) were

identified as being the main underlying causes of flood in the community, 8% of the respondent attribute the causes of flood in the area to be Lack of alternative livelihood, 18% of the respondent attribute it to residing in flood prone areas and poverty as the causes of flood in the area while 9% attribute cause of flood to poverty and no alternative livelihood. (Figure 8)

Figure 8: Factors responsible for Flood in Nasarawa Hayi

Source: Authors Field Survey, 2019

Rainfall Pattern of the area

Owing to the distinctive demarcation between the wet and dry seasons in the region as indicated by the rainfall regime, River Niger flows according to the season, the resultant effect is that the river is characterized with high average monthly flows of 122.0296/sec recorded in 2012. (Figure 9: Average Monthly Rainfall Record of the area) this implies heavy rainfall result to flood which
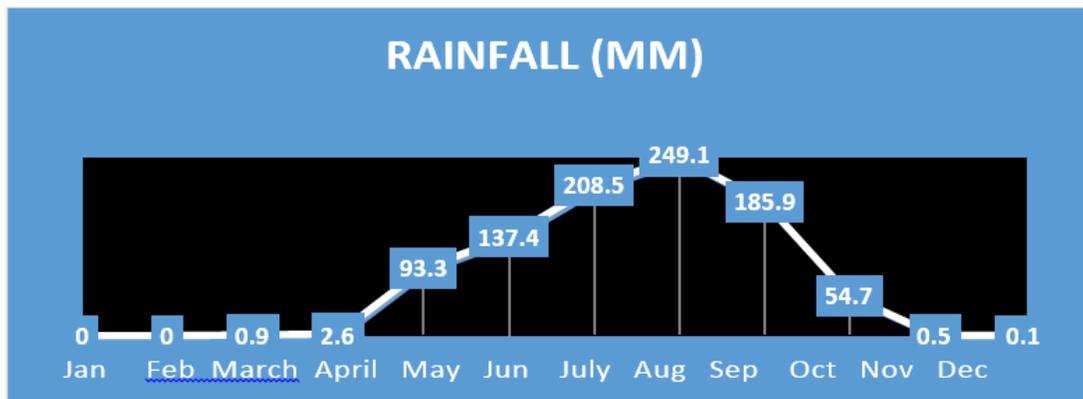
created serious impact on the socio-economic livelihood status of residents

Figure 9: Graph showing the monthly rainfall pattern in the study are

Socio-economic impact of the flood on the communities

From the investigation carried out the subsequent analysis that follows; it was discovered that 21.2% of respondents said flood occurred once in every 15year and above ,32.1% respondents agreed that flood occurred once in 10 years,23.1 % of the respondents ascertains that floods occurred on intervals of five years, while 35.3% of the respondents agreed occurrences of flood is on yearly bases thus they said devastating effect varies from year to years.
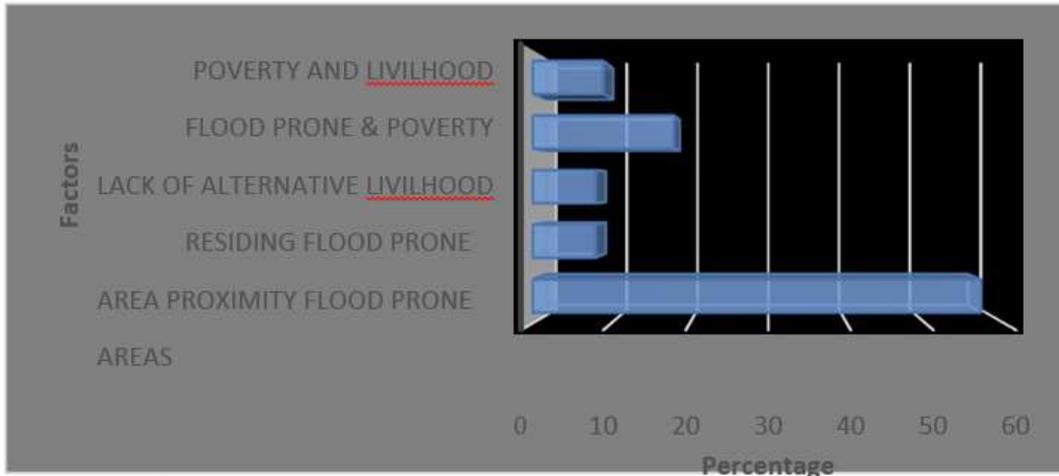
Figure 10: Occurrence of Flood in the Study area

3.2.3   Impact of floods on Agriculture

Most of the sampled households (94%) indicated that their crop fields were damaged by floods. It was also evidence that, most of the damaged cropped are main staple crops such as rice. Yam sugar cane, plantains sorghum and millet only 6% of respondents said that flood did not affect their farm produce. Plate I shows the farm land damaged during the 2012 flood disaster in Nasarawa Hayi. Although no data on area planted was collected, this show that there was impact of flood on agriculture which is the main source of livelihood and income of the residence. (Figure 11)
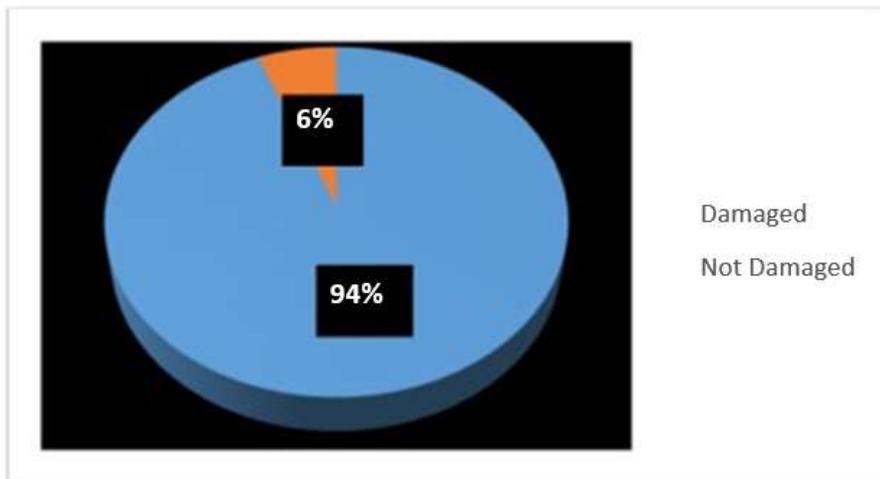

Figure 11: Impact of floods on Agricultural

Source: Author's field work, 2019

Plate i: Effect of Flood on farm land
Source: NSEMA, 2012

Impact of floods on Health

The research revealed that most of the sampled households (64%) indicated that health facilities were available in their communities. Furthermore, very few households (5%) had indicated that health facilities had been damaged by flooding in their communities. The study further revealed that 31% of the sampled households experienced disruption in access to health services due to damaged roads. Disruption in accessing health services implied an increase in disease incidence due to lack access to appropriate medication. (Figure 12)
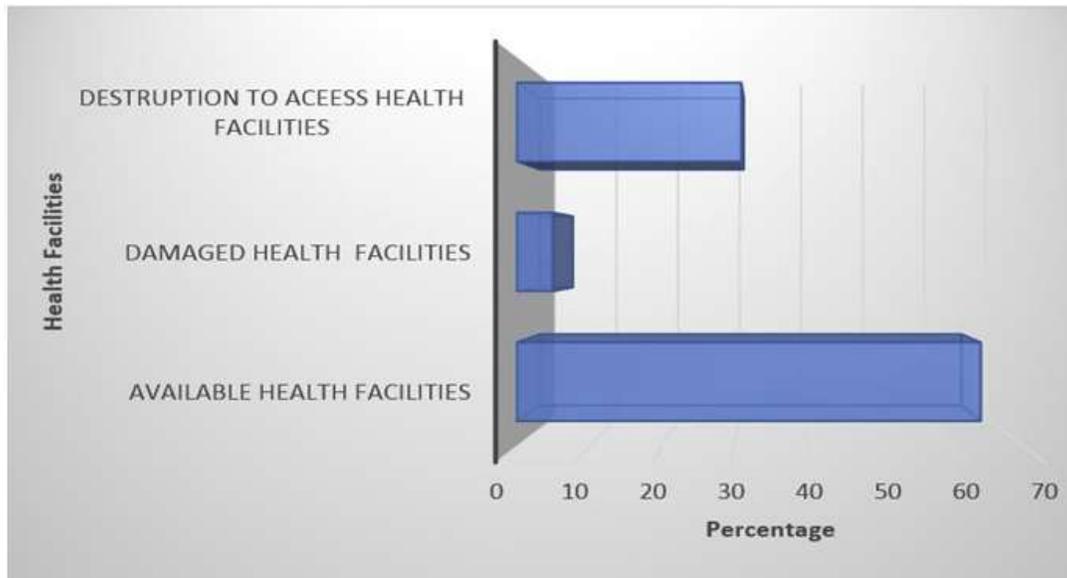
Figure 12: Impact of floods on Health
Source: Author's field work

Common diseases Experienced

The research also revealed in Figure 13 that; out of the sampled households, 77% indicated having at least one member of their household felled sick during the floods. The most significant diseases experienced among the sampled households were, malaria/fever (56%), diarrhea (21%) and cough (15%).
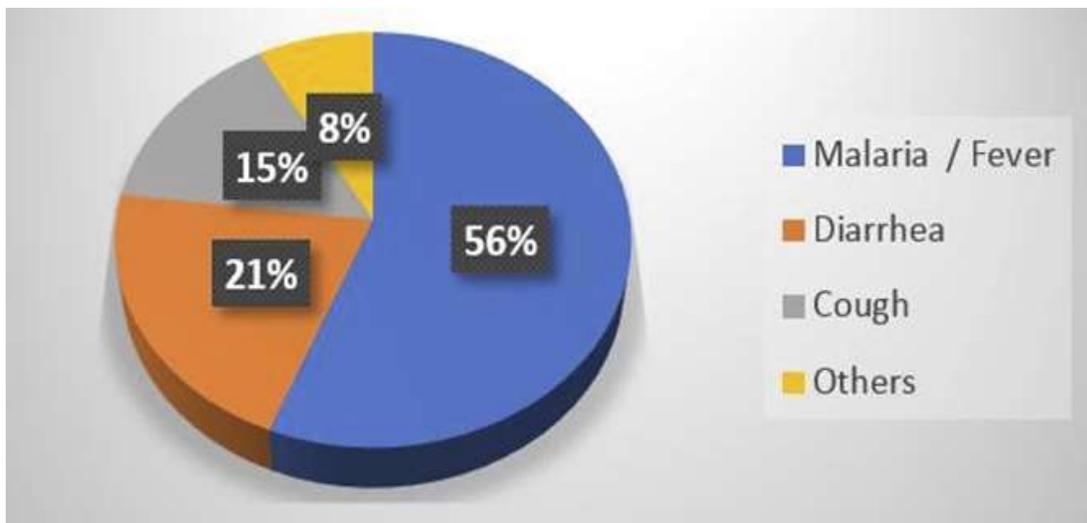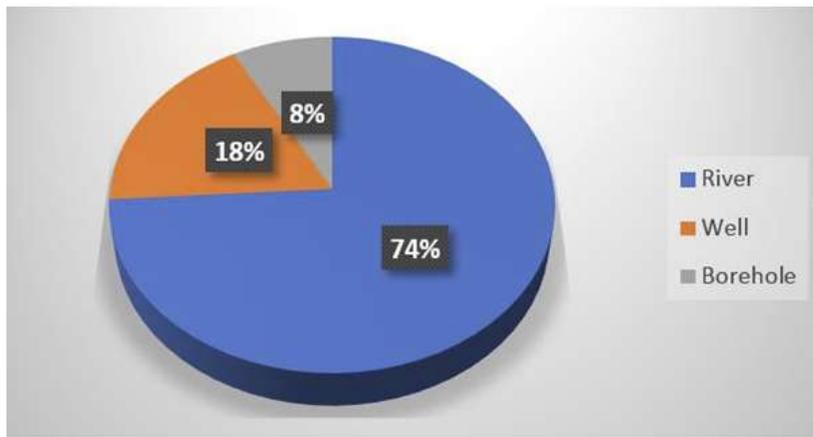
Furthermore, 8% of the sampled households indicated that they experienced other disease outbreak such as scabies, sores and rash during the floods.
Figure 13 Diseases Experienced
Source: Author's field work

Water and sanitation

The sampled communities showed a lot of diversity on the type of drinking water sources they had. It was evident that rivers, boreholes and well were the most common water sources that communities used for drinking the survey established that 74% of the households indicated that their main source of drinking water was the river followed by borehole and hand dug wells at 8%

and 18% respectively. Furthermore, among the sampled households, this indicated that their common water sources for drinking were affected by floods.
Figure 14 Sources of drinking water
Source: Author's field work

Impact of floods on Education

All the sampled households indicated availability of education facilities in their communities. Furthermore, 17% of the sampled households indicated that school infrastructure was damaged due to floods in one way or another. The study showed that 38% of the sampled households indicated that school going children experienced disruption due to floods. The disruption was attributed to various reasons such as road being impassable (32%) and school being submerged (13%). Plate ii

Figure 15 Flood Impact on Education
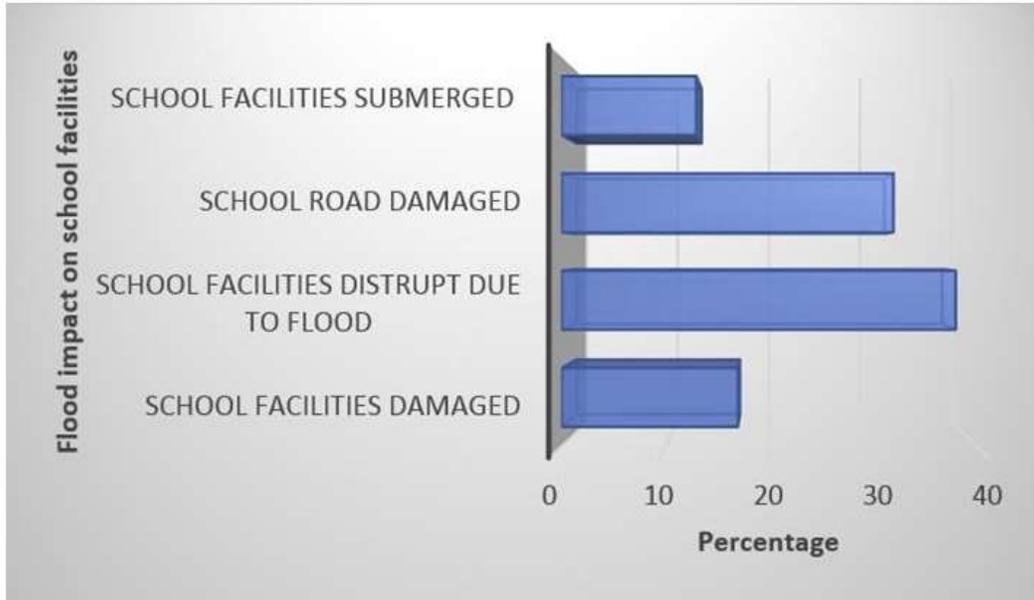
Source: Author's field work

Plate ii: Partial Collapse of School Building

Economic impact of floods on Property and Assets

The research revealed that a substantial number of productive and nonproductive assets were damaged by floods. Of the productive assets which were lost farming tools 45%, 31% lost household utensils and 27% lost others things not specify. This indicated that they lost other property such as clothes and blankets. Most of the losses to these assets were attributed to households' proximity to flood prone areas. Discussions with the communities revealed that some households indirectly lost their assets in that after their houses collapsed, some of the income sources got disturbed. This forced them to off load some assets to raise money to meet other household basic requirements.
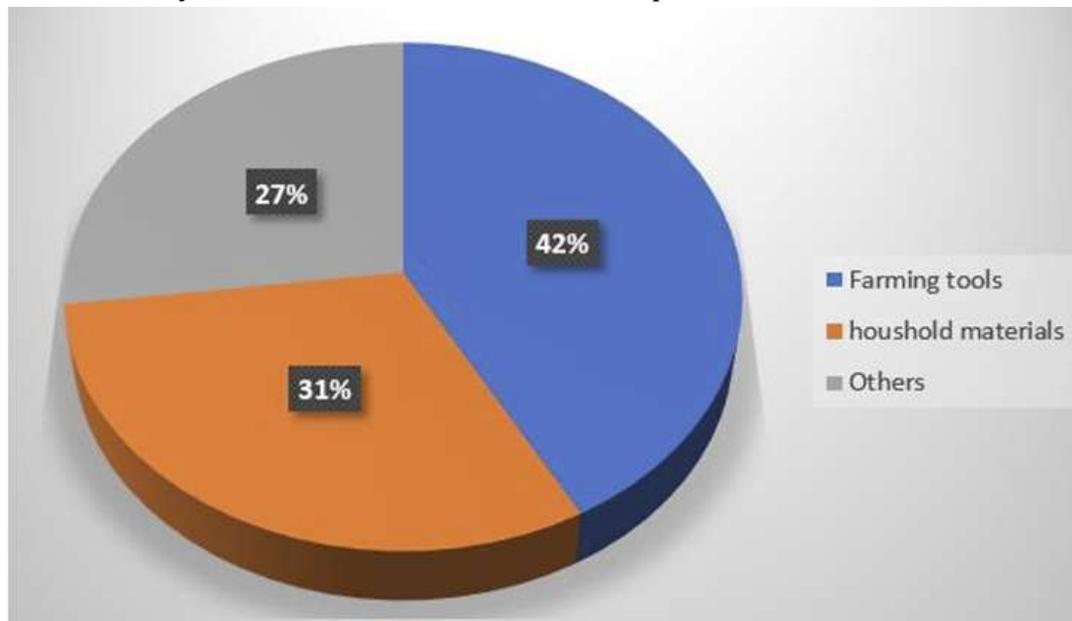

Figure 16: Impact on Property and Assets
Source: Author's field work

Conclusion

Natural devastation events like floods are a phenomenon that cannot be prevented from occurring but it impact can be minimized if effective step of measure are taken to reduce their severity and frequency. Flood is dynamic and natural process which as adverse impact on livelihood of rural communities as mud houses and homesteads are destroyed, cultivated land are wiped out the employment opportunities are reduced. The unpredictable and abnormal

floods which cause a seriously abrupt human settlement and activities. That resulted in to displacement of people, food security, waterborne disease, agriculture loss etc has adverse socio economic impact on people by the river are very much subject matter to study which has much evident in the area.

Recommendations

It is therefore appropriate to highlight some policy consideration which, if Implemented could play an important role in flood risk management. The following policy considerations are recommended Based on the research finding it is an established fact that natural and human activities resulted to the flooding in the study area, therefore there is need for government and stakeholders to be proactive to ensure flood control measure in line with following flood hazard reduction recommendations: -

    i.   Government and key Stakeholders should engage the communities and local authorities in making them aware of the flood risk in view of the climate variability.

    ii.   Community initiated mitigation measures should be promoted so as to build community resilience.

    iii.   An awareness campaign should be established both in urban and rural areas to educate people on flood disaster issues and involve the communities in decision making.

    iv.   Flood mitigation policies and measures should therefore be implemented in order to enable societies to increase their resilience to flood hazards.

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