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Assessing the Effect of Flood Menace on the Community Well-being in Bunyala, Busia County, Kenya

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Abstract:
Flooding has been singled out as the most common in Bunyala Sub-County of all the environmental hazards that have continued to pose tremendous danger to people's lives and property. As such, members of these communities are hardly capable of averting and or managing the impacts of disasters facing them. This study aimed at examining the root causes of persistent floods and strategic community- based interventions in Bunyala Sub-County, and how community coping mechanisms affect the community's well-being. The researcher used a descriptive research design through which the exact condition of Bunyala Sub-County was established in a cross-sectional manner. Data was collected through interviews with key informants, administration of semi-structured questionnaires to household, as well as through discussions in focus groups. The researcher used household as the definite analysis unit. Hence, 384 households were selected as the sample size for the study. Data analysis entailed its cleaning, coding and input into SPSS 11.5 version spread sheet for descriptive statistical analysis. Results showed that flooding effects were significantly higher during the flood season such as destruction of social amenities, houses, productive and non-productive assets though the benefit of living in the floodplains outweighs associated flooding risk.

Keywords: *Flood, effects and community well-being.*

1. Introduction

About 30,000 people staying around rivers in Kenya are usually displaced by floods whenever the rivers burst their banks every rainfall season. These people are usually evacuated to safer higher grounds since the entire homesteads are swept away, property and crops worth hundreds of thousands of shillings are lost, rendering large areas of land inaccessible during floods (Oyugi *et al*., 2003). Whereas Karanja *et al*., (2001) estimates the financial and economic damages attributable to the El Niño floods $800 million, the World Bank estimates the same at $ 1 billion or Kshs. 70 billion. The flood related studies conducted along the last 20 km reach of the Nzoia River in western Kenya indicated that annual effects of flood are approximately US$4.8 million in the Bunyala floodplains and about $ 850,000 in the Kano Plains (Eitel and Ochola, 2006). Agriculture is the backbone of Kenya's economy hence a major contributing source of food security, employment, economic development, and people's livelihoods (Wong *et al*., 2005; ROK, 2010; De Wit, 2006). However, farming activities in Bunyala, lower Tana River Basin and Kano Plains have declined due to destruction by floods every year resulting in reduction in agricultural productions. It is reported that agricultural produce Bunyala reduces by over 50% in a span of three years while in Kano Plains agricultural crops were completely damaged during Flooding in addition to 200 acres of crops along Tana River banks are destroyed (Osbahr and Viner, 2006). Hence, this study sought to examine how flood menace is affecting community well-being.

1.1. Statement of the Problem

AWDR recounts the El Niño floods that devastated various parts of East Africa, including Kenya where the value of infrastructures and properties destroyed were estimated at 1.8 billion dollars (AWDR, 2006). The economic effects of flood are far-reaching given that the infrastructures such as bridges, water pipelines, and roads upon which a country's economy is built are usually vulnerable to the flooding effects. For instance, Kenya experienced serious destructions on her transport networks and water supply infrastructure due to the 1997/98 El Niño floods. Mogaka and his colleagues reported that facilities such as water pumps, pipelines and dams located in 22 Sub Counties were destroyed or too impaired to support the communities' need for water (Mogaka *et al.*, 2006). Besides the direct destructions, floods pose substantial threat to the society's public health that stems from the devastation of sanitation and water infrastructure. Floods often expose members of the society to a toxic and contaminated environment, especially in regard to water and sewage drainage systems. As such, water-related diseases such as diarrhoea, cholera malaria, and typhoid are always on the increase during and shortly after the flooding periods. According to reports by ICPAC (2007) and Osbahr and Viner (2006), the huge floods that accompanied the El Niño of 1997 and 1998 caused the highest number human deaths due to rift valley fever and malaria. Therefore, this study sought to examine how flood menace is affecting community well-being.

1.2. Study Objective

- To examine the effect of flood menace to the community well-being in Bunyala Sub-County

1.3. Hypothesis

- H1: Flood menace has negative effect to the community well-being in Bunyala Sub-County

1.4. Effects of Flood on Community Well Being

1.4 .1. Agriculture

According to IFAD (2007) and Wong *et al. (*2005), in l Kenya, 70 per cent of the population derives its economic activities from agriculture, namely subsistence farming, livestock and fishing. Similar study conducted in Garissa revealed that close to 1,200 hectares of vegetables, tomatoes and bananas and were washed away while 100% of maize, rice, mangoes and bananas were destroyed in Tana River district (Gadain *et al*; 2006).

1.4.2. Water and Sanitation

WRI *et al*. (2007) show that 29 per cent of Kenyans get their water supply from unprotected sources, which carry health risks during flood periods, A number of health hazard like bilharzias, typhoid, cholera and malaria usually come with every flooding incident thereby leading to straining of medical facilities. Even though toilets are not usually common among the Bunyala people, the few that exist are often submerged by the floods. The floods also cause greater problems concerning clean drinking water since even the hand-dug wells at higher grounds collapse (Mango, 2003).

1.4.3. Education

The disruption of education is attributed to various reasons such as road being impassable and school being submerged. These circumstances concur with Kenyans newspaper by the Standard 24th September, 2007 which effects of floods in schools very disheartening as the floods make schools inaccessible for both teachers and students.

1.4.4. Housing

The 2003 floods in Bunyala saw nearly 24,000 out of a population of 56,000 people displaced (source: IFRC, 2003). Some 10,000 of these have been accommodated in the DO's camp, necessitating health emergency measures to control possible outbreaks of waterborne diseases. Scarcity of water sources and the contamination of pipes and bore wells aggravated an already acute problem. Fishing and farming are the major economic activities in Bunyala. Due to the floods and concentration in the camps, the economic activities are greatly disrupted (Opere, 2013).

1.4.5. Transport, Property and Assets

Floods leads to the destruction of transport networks thereby making the cost of food and non-food items' transportation higher. Transporting such items to the victims becomes extremely expensive if it is to be done by air.

1.5. Conceptual Framework

To achieve the objectives of this study, the conceptual framework, as developed by Bogardi, Birkmann and Cardona (BBC), was adapted (Adger *et al.,* 2003). This framework focuses on various ways in which a society is susceptible to natural hazards especially using the social, economic and environmental spheres. Similarly, UNDP (1999) examines these spheres based on three major pillars as mentioned. This makes it simple to examine complicated sectors as environmental vulnerability of the society. According to this framework, the analysis of the vulnerability of the society goes beyond examining and estimating the past disaster deficiencies. It also entails a wider focus on vulnerability during planning stage. Thus, the focus should simultaneously be on the vulnerability of the society, its capacity and ability to cope and strategies that can be used to reduce the level of vulnerability.

6. Methodology

This study aimed at examining the root causes of persistent floods and strategic community- based interventions in Bunyala Sub-County, and how community coping mechanisms affect the community's well-being. The researcher used a descriptive research design through which the exact condition of Bunyala Sub-County was established in a cross-sectional manner. Data was collected through interviews with key informants, administration of semi-structured questionnaires to household, as well as through discussions in focus groups. The researcher used household as the definite analysis unit. Hence, 384 households were selected as the sample size for the study. Data analysis entailed its cleaning, coding and input into SPSS 11.5 version spread sheet for descriptive statistical analysis.

7. Findings

7.1. Response Rate

Table 1 reveals the response rate from the sample.

Variables	Categories	Percent (%)	Frequency Count	Valid Percent (%)
Age	18-35 years	35.9	138	35.9
	36-55 years	45.1	173	45.1
	Over 55 years	19.0	73	19.0
Total		**100**	**384**	**100**
Gender	Male	32.0	123	32.0
	Female	68.0	261	68.0
Total		**100**	**384**	**100**
Marital Status	Single	7.0	27	7.0
	Monogamous	47.1	181	47.1
	Polygamous	13.3	51	13.3
	Widowed	31.3	120	31.3
	Separated/divorced	1.3	5	1.3
Total		**100**	**384**	**100**

Table 1: Summary of respondent Age, Gender & Marital status

7.2. Effects of Flood on Community Well Being

7.2.1. Agriculture

Most of the respondent (79.2%) indicated that their crop fields were damaged by floods (Figure 1). From the study, it was evident that there was serious impact on agriculture which was the main source of livelihood. This impact was felt through the increase of commodities (maize, Cassava, sorghum and vegetables) which they import from Uganda. Further supported by IFAD, 2007 and Wong *et al.,* 2005 says in l Kenya, 70 per cent of the population derives its economic activities from agriculture, namely subsistence farming, livestock and fishing. Similar study conducted in Garissa revealed that close to 1,200 hectares of vegetables, tomatoes and bananas and were washed away while 100% of maize, rice, mangoes and bananas were destroyed in Tana River district (Gadain *et al*; 2006).

7.2.2. Water and Sanitation

The respondents showed a lot of diversity on the type of drinking water sources they had. It was evident that river, Lake, shallow wells, borehole and tap water were the most common water sources that communities used for drinking. The survey 78% indicated that their common water sources for drinking were affected by floods (Figure 1). In terms of sanitary facilities, 68% of the sampled households had no sanitary facilities (i.e. using bush and rivers as alternatives). Furthermore, 56% of the households indicated having traditional pit latrines as their main sanitary facilities. Within the households that indicated having sanitary facilities, 56% had indicated that their facilities were damaged by floods. These findings concur by the reach conducted by WRI*et al*., 2007 which shows that 29 per cent of Kenyans get their water supply from unprotected sources, which carry health risks during flood periods,

A number of health hazard like bilharzias, typhoid, cholera and malaria usually come with every flooding incident thereby leading to straining of medical facilities. Even though toilets are not usually common among the Bunyala people, the few that exist are often submerged by the floods. The floods also cause greater problems concerning clean drinking water since even the hand-dug wells at higher grounds collapse (Mango, 2003).

7.2.3. Education

The study revealed that 74% of the sampled households indicated that school infrastructure was damaged due to floods in one way or another. The study showed that 68% of the sampled households indicated that school going children experienced disruption due to floods (Figure 1). The disruption was attributed to various reasons such as road being impassable and school being submerged. These circumstances concur with Kenyans newspaper by The Standard 24th September, 2007 which effects of floods in schools very disheartening as the floods make schools inaccessible for both teachers and students.

7.2.4. Housing

Among the three hundred and eighty-four sampled households, 84.9% indicated that their houses collapsed due to excessive impacts of floods while 15.1% had their houses surrounded with water were forced to relocate to other alternative areas as shown in Figure 1.

The 2003 floods in Bunyala saw nearly 24,000 out of a population of 56,000 people displaced (source: IFRC, 2003). Some 10,000 of these have been accommodated in the DO's camp, necessitating health emergency measures to control possible outbreaks of waterborne diseases. Scarcity of water sources and the contamination of pipes and bore wells aggravated an already acute problem. Fishing and farming are the major economic activities in Bunyala. Due to the floods and concentration in the camps, the economic activities are greatly disrupted (Opere, 2013).

7.2.5. Transport, Property and Assets

The research revealed that a substantial number of productive and nonproductive assets were damaged by floods. The research showed that 71% of households' property and asset were severely destroyed (Figure 1). Of the productive assets which were lost, were fishing

nets and hoes while the majority of non -productive assets were beds, chairs and radios while some households indicated that they lost other property such as clothes and blankets. Floods also leads to the destruction of transport networks thereby making the cost of food and non-food items' transportation higher. Transporting such items to the victims becomes extremely expensive if it is to be done by air.

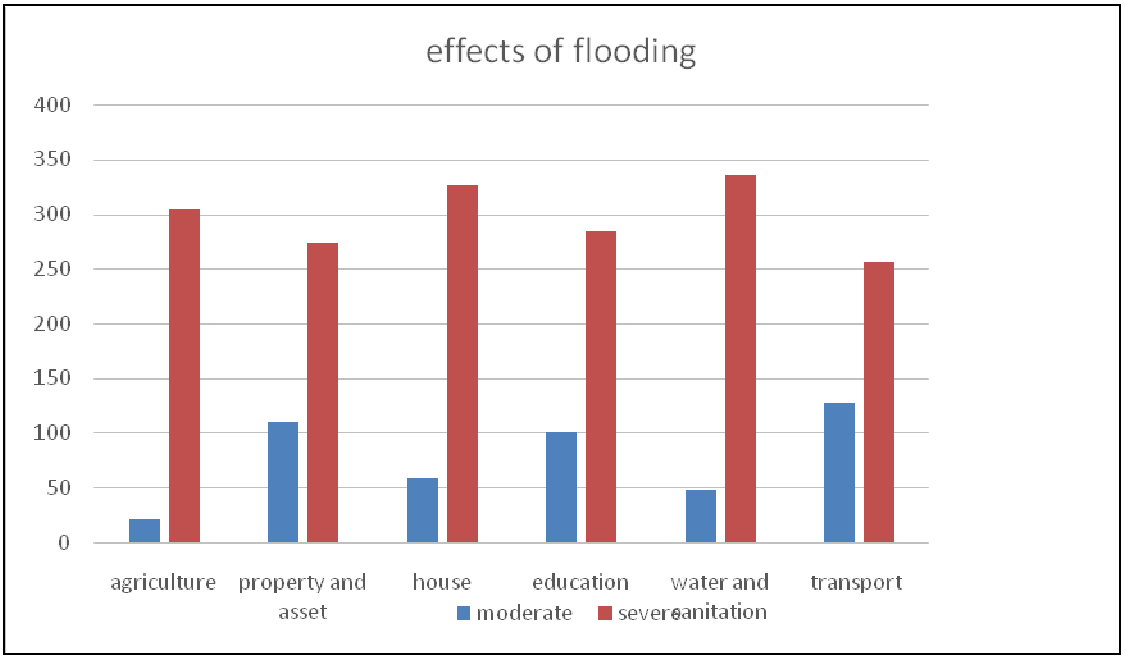

Figure 1: Effects of floods on community well being

8. Conclusion

Floods have caused destruction and disruption of social economic livelihood, outbreak of water borne diseases (e.g. cholera, typhoid) due to blockage of pit latrines, destruction of invaluable properties as well as death of many people. The economic effects of flood are far-reaching given that the infrastructures such as bridges, water pipelines, and roads upon which a country's economy is built are usually vulnerable to the flooding effects.

8.1. Recommendations

Therefore, based on the findings of this study, the following strategies are recommended to solve the effect of floods in the region:

i. Government at all levels need to shift from being reactive to being proactive in responding to floods.
ii. There is also the need for government at all levels and its agencies to fund and map out contingency plans and emergency preparedness plans to prevent flood outbreaks crisis in Bunyala Sub County.

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