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## Coping with Floods in Savannah Region of Ghana

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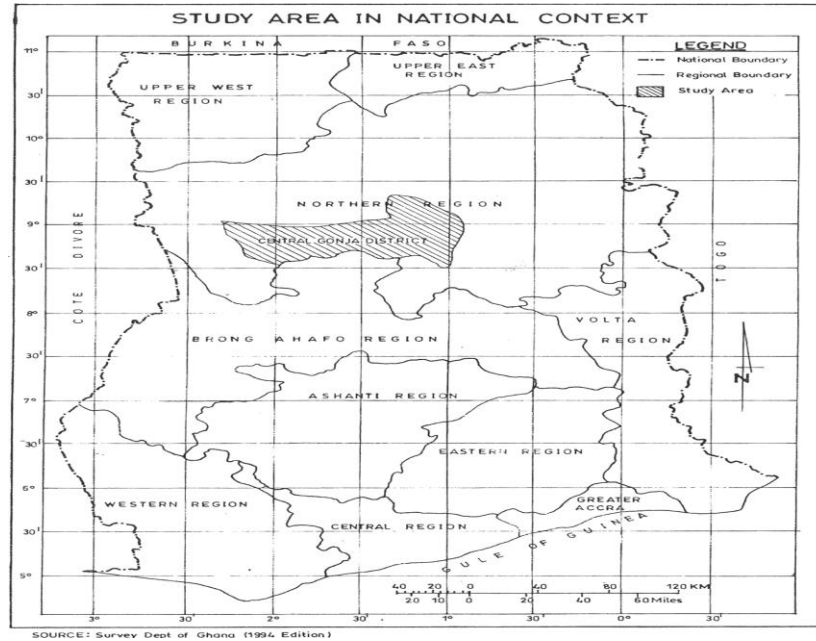
### ABSTRACT

Human interaction with environment can generate human vulnerability to floods surpassing household and community resistance and resilience. This study is mainly focussed on studying how reducing access to and deteriorating conditions of key assets has increased human vulnerability to floods in the Savannah. The study was used to demonstrate how demographic characteristics of people affect ability to access key assets to cope with floods. Two towns highly vulnerable to floods were selected in Savannah region, data was collected, and analysed. Both qualitative and quantitative analysis was undertaken and presented using descriptive and inferential statistics. The chi square test was used to establish a relationship between variables observed. The results of the analysis showed that most of them lacked access to key assets, which affects their ability to anticipate, resist, and recover from floods. Most vulnerable groups were female and aged, rural areas more vulnerable than urban centre. The study concludes that, there is need of understanding how demographic characteristic affect ability to access key assets and increase human vulnerability to floods and establish an effective program to reduce this.

### KeyWords

Gender; age; hazards; vulnerability; resistance; resilience; urban; rural.

## INTRODUCTION



### Areas of study

Central Gonja district in the Savannah region of Ghana Affected by flood in November 2010. Statistics of flood- 55 communities in Central Gonja District were affected, 70,000 people were displaced, 3234 houses collapsed, 23,588 acres of farmlands were destroyed at the cost of 116,340.22 US dollars. Two prominent towns affected by floods in Savannah region of Central Gonja District.

### BUIPE AND YAPEI

Buipe, an urban centre and district capital. 12,418 people were displaced, 1196 houses collapsed, 81 acres of farmlands were destroyed at cost of 48,410.76 US dollars. Yapei, where 784 people were displaced, 298 acres of farmlands were destroyed at an estimated cost of 31,912.26 US dollars .

Buipe is an urban centre and district capital with population 8347 people and Yapei, on the other hand, is a rural area with population of about 4044 people. The population growth rate in these two areas is over 3.1% which is greater than national growth rate of 2.8%. Buipe and Yapei are located along the Black and White Volta Rivers, mean annual rainfall is 1000 to 1500 millimeters which is unevenly distributed and mainly occurs in May to October. Highest rainfall with greatest number of rainy days and high intensity of rainfall 300 millimetres per hour was recorded in month of August.

There is high prevalence of poverty in these areas where natural hazards affect significantly community development in Savannah area of Ghana. Hence researchers have concluded that environmental hazards that harm people may surpass their ability to cope with impacts of it.

Process of continuing after floods with resilience and resistance to absorb losses and recover from flooding is coping. Several strategies have been put forward which are remedial actions undertaken by people whose survival and livelihood are affected which vary according to region, community, social group, gender, age, season and time in history and to a large extent influenced people's previous experience.

Excessive rainfall and absence of socio-demographic characteristics to key assets are attributed to increasing flood impact in Savannah region. Therefore, the study is focussed on determining how decreasing access and deteriorating conditions of key assets is increasing human vulnerability to floods.

## **METHODS**

Two units of analysis were selected namely household and community. Communities were selected chosen because of history floods. Household is a basic unit of consumption and production and can be considered as group of persons that cohabitate need not to be related by blood or marriage and share same living style and consider themselves as single unit. Document analysis, focus group discussion, interviewing of respondents, direct observation and administration of questionnaires to gather data were simultaneously carried out.

Selection of sample units was carried out with multistage cluster sampling . In the first stage, simple random technique was used to select communities. At Buipe, the communities included Buipe Bridge, Yipala, Goroase, and Worontu. Numbers were written on piece of paper, numbered from 1 to 4 and each number represented community, this was done in accordance with fish bowl method. Buipe Bridge was randomly chosen. At Yapei, the communities included Daresalam, Quarters, Old Yapei and Madina Line. The fish bowl method was again used for selection of neighbourhood and Old Yapei was randomly chosen.

Second stage of sampling involved selection of households from neighbourhoods . Buipe had 1264 households. The total sample size for Buipe Bridge was 12% that is 152. At Yapei, the total number of households was 542. The total sample size was 12% that is 65. Again at the second stage the procedure for selecting households was systematic. Sampling fraction was obtained by dividing the sample size by the total number of households which was 1/8th both communities. The starting point for the selection was random to avoid bias and for purpose of interference. At Buipe the random number chosen was 5 and at Yapei 3 was chosen. In some areas, there were compounds houses where there were more than one household so in that case only one head of household was interviewed based on assumption that household shared same socio-demographic characteristics, flood experience, and coping strategies.

Both primary and secondary sources of data were used for the purpose of research. Primary sources included focus group discussion, questionnaires and interviews. Secondary source includes documents, journals, newspapers and also reports from National Disaster Management Organisation (NADMO), and Central Gonja District Assembly. Reports from NADMO were used to get data on available flood statistics. Rainfall statistics were obtained from the Ghana Meteorological Agency.

The data collected for rainfall statistics was to support the argument that rainfall alone was not responsible to hazards and reports were also collected from the Central Gonja District Assembly on the backgrounds of the communities.

Structured interviews were conducted seek opinion on mitigation strategies provided by them, causes of flooding and vulnerability, access to key assets and why recovery and not relocation has been the choice of the people. Questionnaires were used for heads of households. The questionnaires were divided into sections which included socio-demographic characteristics of respondents, building structures, flood experiences, recovery and assets of respondents.

Focus group discussions were used for community elders, both women and men were of different ethnic groups and had stayed in the community for more than 30 years. FGD were carried out to provide more information on floods. The discussions were carried out on the 14 October 2011 at different times for both men and women. The focus group at Buipe consisted of 15 peoples (7 men and 8 women) and the discussions lasted for about 138 minutes (65 minutes for men and 73 minutes for women).

In Yapei the focus group consisted of 14 peoples (7 men and 7 women) and the discussions lasted for 135 minutes in Yapei (65 minutes for women and 70 minutes for men). Data was analysed using the Statistical Package and Service Solution (SPSS). Hypotheses and inferential statistics were used and chi square test was used for hypothesis which involved two categorical variables namely age and gender which do no influence access to key assets.

## **RESULTS AND DISCUSSIONS**

Vulnerability of human population to environmental hazards has increased considerably in the recent years despite the fact that numerous steps have been taken to avoid disasters. It has therefore been considered that vulnerability is irrespective of physical location of people but depends mainly on lack of access to key assets like education, land, loans, help and secure housing.

Social, economic, and political processes are generators of vulnerability to hazards as they influence how hazards affect people in varying ways and different intensities. This section presents findings from the study carried out as to how demographic characteristics of individuals and group affect their ability to access key assets and their ability to cope with it.

Asset can be defined as stock of financial, human, natural or social resources that can be acquired, developed, improved and transferred across generations, which generates consumption flow and additional stock. Bebbington defines Assets as ‘not simply resources that people use to build livelihoods, but they give them the capability to be and act’.

In recent times, capital assets mainly includes both tangible and intangible assets, which include physical, financial, human capital, social and natural capital. We used all the five assets in the study, these include land (natural), education (human), loans (financial), secure housing (physical) and assistance (social) from friends, relatives, government and non-governmental agencies as they help those affected with floods to anticipate, resist, and recover from flood situations.

Productive assets like land and secured houses represent a store of value and can be turned into cash when needed. Access to education can help individuals gain knowledge and skills and employment in formal sector to overcome impact of floods. Financial assets like loan help in

speedy recovery of disaster victims as it can be used to restore properties that are destroyed. Recent studies also explain how assets are important for reducing poverty, and to overcome from natural disasters, illness or financial crises.

Some socio-demographic characteristics like age and gender have been identified to influence vulnerability to hazards, influence access to key assets as age affects one's ability to cope from the impacts of hazards.

Studies show children and women are more vulnerable to natural disasters 14 times more than men , for example in 1991 cyclone disasters which killed 140,000 in Bangladesh, 90% of victims were women and in Sri Lanka, males were mainly taught swimming and tree climbing, which helped them survive and cope better than females when the waves of the tsunami hit and due to Social prejudice girls and women were kept away from learning to swim thereby reducing their chances of survival.

Informal sectors where employment aspects are more in case of women than men are often worst affected due to lack of capital and limited access to credits.

- Gender and access to human, natural, social, financial and physical capital
- Row variables: Gender, male, female
- Gender and access to education, land, social network, loans and houses at Buipe and Yapei.
- Chi square test
- Row variable: Values, D.f. and Asymp.sig.(2-sided)

Table: Chi square test on gender and access to assets

Education		Land		Help		Loans		Housing	
Buipe	Yapei	Buipe	Yapei	Buipe	Yapei	Buipe	Yapei	Bupei	Yapei
14.126	2.128	9.598	2.554	1.632	0.027	0.586	0.868	3.836	0.602
4	3	1	1	1	1	1	1	2	1
0.007	0.546	0.002	0.110	0.201	0.869	0.444	0.351	0.147	0.438

- Gender and rate of recovery at Buipe and Yapei
- Count and percentages
- Row variables gender, male, and females

Less than a year%		More than a year %	
Buipe	Yapei	Buipe	Yapei
43	34	22	49
8	0	27	17

- Age and access to education, land, social network, loans and houses at Buipe and Yapei.
- Row variables Gender, low than 60 years and 60 years and above.

Education%		Land%		Help%		Loans%		Housing%	
Buipe	Yapei	Buipe	Yapei	Buipe	Yapei	Buipe	Yapei	Buipe	Yapei
28	12	32	29	19	8	34	4	45	55
4	2	9	20	6	11	13	2	18	40

- Chi square test on age and access to human, natural, social, financial and physical capital.
- Row variables values, D.F., Asymp. Sig. (2-sided)

#### ASSESTS

Education		Land		Help		Loans		housing	
Buipe	Yapei	Buipe	Yapei	Buipe	Yapei	Buipe	Yapei	Buipe	Yapei
10.201	4.898	1.093	0.022	0.047	1.014	0.714	0.480	1.567	0.087
4	3	1	1	1	-	1	1	2	1
0.037	0.179	0.296	0.883	0.398	0.488	0.398	0.488	0.457	0.768

- Age and rate of recovery at Buipe and yapei
- Row variable age, less than 60 years and more than 60 years and above.

#### COUNT PERCENTAGES

		More than a year%	
Less than a year%			
Buipe	Yapei	Buipe	Yapei
42	23	33	35
9	11	16	31

#### CONCLUSION

It can be concluded that nature events and their characteristics are insufficient to explain the human vulnerability to floods. Most of these people lacks assets, financial, educations, basic household which would make them to anticipate, resist, and recover from floods. Hence it can be concluded that lack to key assets leads to failure of basic anticipation, resistance, and recovering capacity from flood impact.

Therefore intervention efforts should be designed to provide assets and assets should be build up in order to recover from flood -like situation. Such efforts from people of Buipe and Yapei will provide them basis resistance and recovering capacity in flood-like situations.

#### REFERENCE

- [1] National Disaster Management Organization, 2010. Flood statistics for Buipe and Yapei, 2003–2010. Ghana: Buipe.
- [2] Tobin GA, Montz BE, 1997. Natural Hazards: Explanation and Integration. New York: The Guilford Press.
- [3] World Health Organization, 1999. Emergency Health Training Programme for Africa, WHO/EHA/EHTP. PanAfrican Emergency Training Centre, Addis Ababa.
- [4] Ghana Statistical Service, 2000. Population and Housing Census: Summary Report of Final Results. Ghana: Accra.
- [5] Ghana Meteorological Agency, 2010. Annual Rainfall Figures for Yapei and Buipe, 2000–2010. Ghana: Accra.
- [6] Ghana Statistical Service, 2005. Ghana Living Standards Survey, Series Five. Ghana: Accra.
- [7] Changnon SA, Pielke RA, Cnangnon D, Sylves RT, Pulwarry R, 2000. Human Factors Explain the Increased Losses from Weather and Climate Extremes. *Bulletin of the American Meteorological Society*, 81: 437–442.
- [8] Blaikie P, Cannon T, Davis I, Wisner B, 1994. *At Risk: Natural Hazards, People's, Vulnerability and Disasters*. London: Routledge.
- [9] Ford Foundation, 2004. *Building Assets to Reduce Poverty and Injustice*. New York: Ford Foundation.
- [10] Bebbington A, 1999. Capitals and Capabilities: A Framework for Analyzing Peasant Viability, Rural Livelihoods and Poverty. *World Development*, 27: 2021–2044.
- [11] Moser C, 2006a. Asset Accumulation Policy and Poverty Reduction. <http://www.brookings.edu/global/assets06/conference.htm>
- [12] Moser C, 2006b. Assets and Livelihoods: A Framework for Asset-Based Social Policy. In: Moser C (Ed.), *Assets, Livelihoods and Social Policy*. Washington, DC: World Bank and Palgrave.
- [13] Doss C, Grown C, Deere CD, 2008. Gender and Asset Ownership: A Guide to Collecting Individual Level Data. *Policy Research Working Paper*, 4704.
- [14] Aguilar L, 2004. *Climate Change and Disaster Mitigation*. Switzerland: IUCN.
- [15] Oxfam, 2005. *The Tsunami's Impact on Women*. [http://www.oxfam.org/en/files/bn050326\\_tsunami\\_women/download](http://www.oxfam.org/en/files/bn050326_tsunami_women/download)
- [16] Nelson V, Meadows K, Cannon T, Morton J, Martin A, 2002. Uncertain predictions, invisible impacts, and the need to mainstream gender in climate change adaptations. *Gender & Development*, 10(2): 51–59.
- [17] Deere CD, Doss CR, 2006. The gender asset gap: what do we know and why does it matter? *Feminist Economics*, 12(1&2): 1–50.
- [18] Hulme D, Shepherd A, 2003. Conceptualizing chronic poverty. *World Development*, 31(3): 403–423.
- [19] Hulme D, McKay A, 2005. *Identifying and Measuring Chronic Poverty: Beyond Monetary Measures*. CPRC-IIPA Working Paper, 30. Manchester: Chronic Poverty Research Centre.
- [20] Theresa Dari, *Art and Social Science Journal* Vol. 2013: ASSJ-61, *Coping With Floods in the Savannah Region of Ghana*, Department of Geography and Rural development, Kwame Nkrumah University of Science and Technology, University Post office, Kumasi, Ghana