INFORMATION DISSEMINATION, EARLY WARNING SYSTEMS AND DISASTER MANAGEMENT IN SHIRORO LOCAL GOVERNMENT, NIGER STATE, NIGERIA

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Abstract: *African societies have experienced a lot and diverse forms of disasters ranging from epidemics, flood, landslide, terrorism, desertification, pollution, fire etc. Given the increased number of disasters in Nigeria and in Niger state, it is imperative to examine the rate of Information dissemination, early warning system and disaster management program in Niger state, using Shiroro local government as a case study. Mixed methodology was adopted in this study, a combination of both qualitative and quantitative methodologies were employed. Information was obtained from questionnaire, checklist, personal observation, and interview. 400 sets of questionnaire were administered and collected. Information obtained from various sources which have been listed above was analyzed by means of percentages and simple table method. The study found out that 50%of disasters that happened in Shiroro local government (2012-2016) is wind storm while community based meeting is major means of disseminating disaster information. Recommendations were proffered based on the findings of this research. To Niger state government they should provide the communities in Shiroro local government with more infrastructures such as good road, telecommunication network, electricity, and good water supply so as to reduce their vulnerabilities and increase their resilience level to disaster. To the community they should work with Niger state environmental protection agency, in planting of trees and other environmental protection techniques that can mitigate or prevent wind storm.*

INTRODUCTION

Extensive Research and study have been conducted with respect to information dissemination, early warning systems and disaster management, in under-developed, highly-developed and developing countries, within/outside academic environment. The concept of information dissemination, early warning systems and disaster management could be traced back to the time when the first man moved into the caves to protect himself from the forces of nature that acted against his survival. The environment, in which we live, greatly affects our health, lives, and property. There is an evident that the frequency, pattern and dimension of disasters are increasing globally on a daily basis (Warren, 2010). From 1900-1909, the world experienced seventy-three (73) disasters, compare to two thousand seven hundred and eighty-eight disasters (2788) in from 2000-2005 (Kusumasari et a l., 2010). According to centre for research on epidemiology of disaster (2014), in 2013, the world experienced a total of 330 reported disasters cases while in 2015 there was a total of 376 reported cases in the world.

Based on this information available, one can clearly say that disaster have placed havoc on millions of people around the globe and in most situations disasters cannot be totally eliminated from the world but it impact on the society can be minimized through adequate disaster management planning, information dissemination and good early warning system. According to Madu (2016), he identified necessary and essential ingredient needed for disaster information to be effective and efficient. According to him disaster information must be relevant, timely, accurate, and communicated to the right person. This is cannot be achieved if information dissemination and early warning system do not takes it rightful position in disaster management. Based on this information, there is urgent need to study information dissemination, early warning system and disaster management using Shiroro local government as case study: bearing the mind the existing early warning systems, the approaches to disaster management, the disaster risks prevalent in Shiroro local government and toascertain the effect of early

warning on disaster management in Shiroro local government.

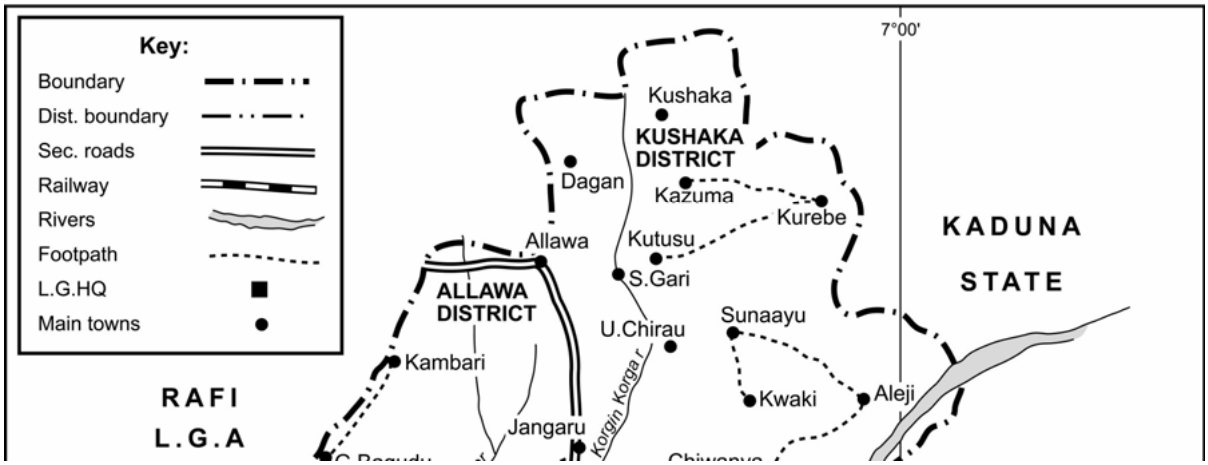
2.0 Research Area

The Study area is kuta and Gurumana community in Shiroro local government of Niger state. Shiroro local government is one of the local governments in Niger state, Nigeria. Its headquarters is in the town of Kuta. It has an area 5015km and a population of over three hundred thousand people. Shiroro local government area was created from former Chanchaga local government area. Kuta was the headquarters of the former Chanchaga local government, when shiroro local government was established in 1989 local government, kuta became the headquarters of the new formed local government. Shiroro local government is composed of six districts: Kuta, Galadima- Kogo, Manta, Gurmana, Allawa and Kushaka districts (SLG, 1999). Shiroro local government, which covers an area of 48,000 square kilometres, has a climate, which is tropical and belongs to the tropical wet and dry (AW) of the Koppen system of climatic classification, with rainfall varying between 1100mm in the north to 1600mm in the southern part of the area (Garnier, 1967).

The population of the Shiroro local government is estimated to be above 300,000. Gwari language is the major language spoken while other indigenous tribes such as Bassa, and Gurmana are also predominant. Other tribes representing the diverse socio-cultural groups are equally found in this area, e.g. the Hausa, Fulani, and Igbo (SLG, 1999). Based on topography, soil texture and soil nutrients in the local government, the major occupation is farming, other occupation include fishing due to the availability of water from river Kaduna (SLG, 1999). The local government is blessed with numerous natural and mineral resources like gold diamond and columbite (SLG, 1999). In addition to this, agricultural has been the bedrock of their daily activities. The local government is widely known for food production namely: yam, rice, millet, sweet potatoes. In animal husbandry, the local government has remarkable landmark in rearing of cattles, goats, sheep, and dogs.

The local government has a dam known as shiroro dam. This dam was named after Shiroro community. The dam is located on the latitude of 9° 58N and latitude 6° 51E. River kaduna is main source of water to the dam (GEC, 2004). There are about 15 tributaries of the Kaduna River within the Shiroro watershed, the major among them being rivers Dinya, SarkinPawa, Guni, Erena, and Muyi (Jimo, et al., 1992). The tributaries flow in the north south direction and few in the northwest to southeast direction. Some surface hydrology has the problem of low base of rivers (Jimo, et al., 1992). The storage areas do not sustain the river during extended dry season. This explains the seasonality characteristics of these rivers, since they depend on rainfall. It is obvious therefore, that the volume of the rivers swell in volume with ranging torrent while in the dry season they dwindle to dry up (Jimo, et al., 1992).

Shiroro Local Government



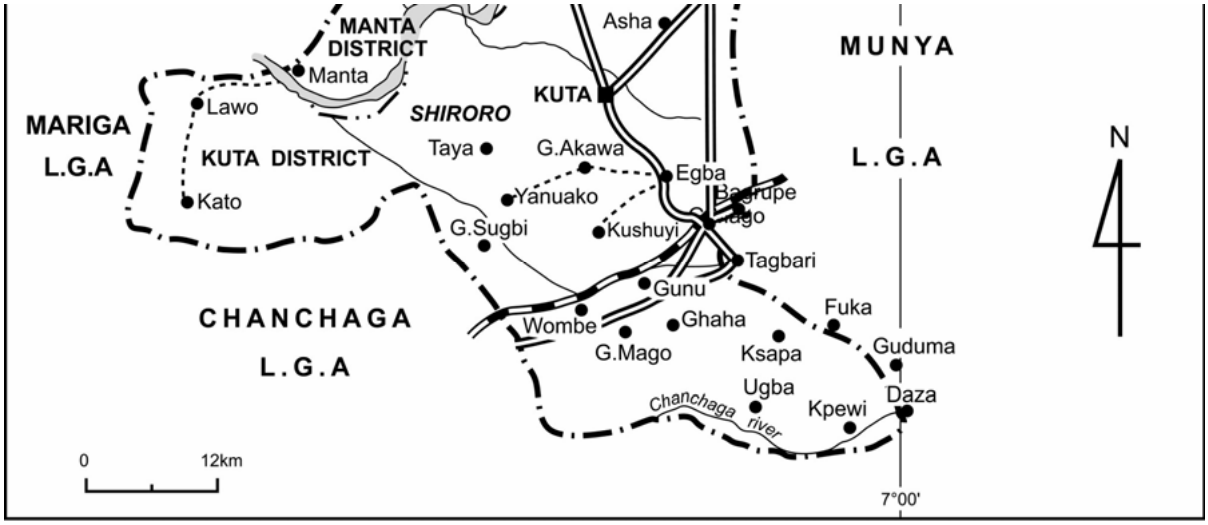


Figure 1 (Adapted from Shiroro local government secretariat: 2005).

3.0 Research methodology

The research utilized data from both primary and secondary data sources: the primary data was obtained through a thorough survey which entails personal visitation to the study area in order to acquire knowledge and proper understanding about various early warning systems used in Shiroro local government, disaster risks prevalent in Shiroro local government and ascertain the effect of early warning on disaster management. The secondary data include maps of Shiroro local government, number of reported disaster cases from 2012-2016, and the flow of disaster information in Shiroro local government. This information was obtained from various stakeholders who have fact and figure about the study.

4.0Result and discussion

The results of this research is divided into 3 based on the manner in which the study is carried out. The results from field survey obtained wasanalysed using pictures, tablesand graphs

4.1 Early Warning Systems in Shiroro Local Government

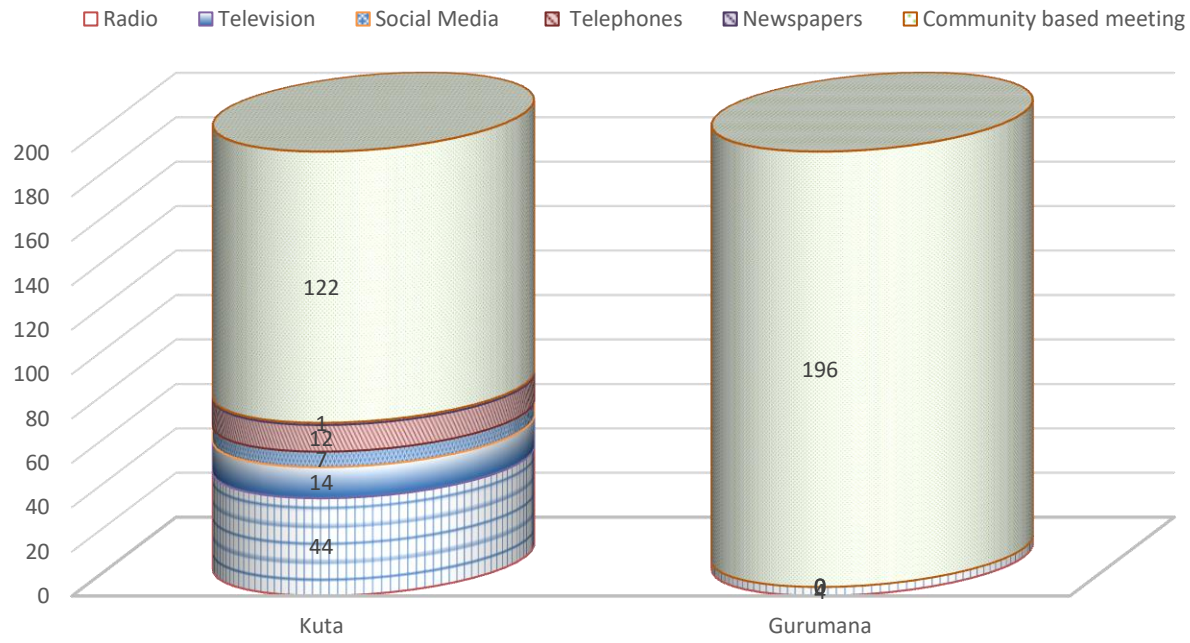
Early warning can also be referred to the process of generating and disseminating warning messages that give individuals, communities and organizations sufficient time to react and protect themselves against harm or loss caused by certain hazards (Relief Web, 2008; UN-ISDR, 2009).

Table 1: What are the Existing Early warning systems in Kuta and Gurumana

Early warning systems	Kuta	Gurumana	Total Frequency	Percentage
Radio	44	4	48	12
Television	12	0	12	3
Social Media	7	0	7	1.8
Telephones	14	0	14	3.5
Newspapers	1		1	0.2

Community based meeting		122	196	318	79.5
Total		200	200	400	100

Source: Field Survey (2017)



Source: Field Survey 2017

Figure 1: What are the Existing Early warning systems in Kuta and Gurumana

Table 1 and figure 1 above show 400 respondents view on the question: what are early warning systems in their community: 44 and 4 respondents (i.e. 12%) in Gurumana and Kuta (respectively) community say it is radio, 14 and 0 respondents (i.e. 3.5%) in Gurumana and Kuta community say it is television, 7 and 0 respondents (i.e. 1.8%) in Gurumana and Kuta community say it is social media, 1 and 0 respondent (i.e. 0.2%) in Gurumana and Kuta community says it is telephone, 122 and 196 respondents (i.e. 79.5%) in Gurumana and Kuta community say it is community based meeting. This implies that community base meeting is the most used early warning systems in Shiroro local government.

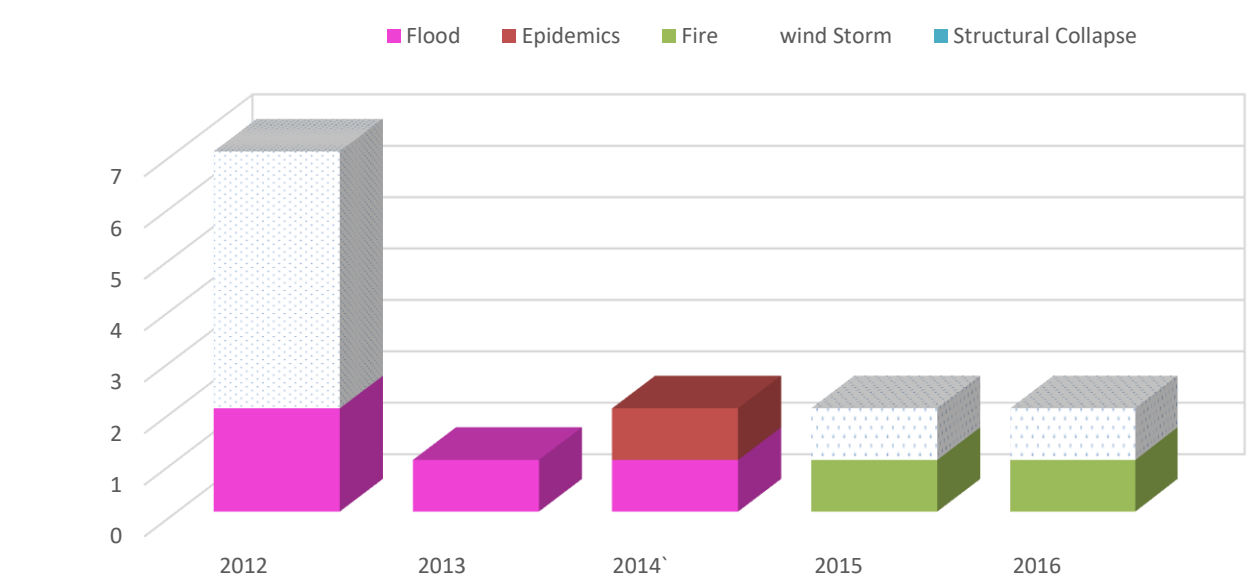
4.2 The prevalent disasters in Shiroro local government

Disaster is an event that has happened in a community, that has affected the functionality of the community, causing a wide spread of deaths, injuries, damage , loss and negative environmental impact to the extent that the communities affected cannot cope without external.

Table 2: Number of Reported Disasters Cases in Shiroro Local Government

Disaster	2012	2013	2014`	2015	2016	Total Disaster	Percentage (%)	Total Community Affected
Flood	2	1	1			4	29	7
Epidemics			1			1	7	5
Fire				1	1	2	14	2
wind Storm	5			1	1	7	50	9
Structural Collapse						0		0
TOTAL						14	100	23

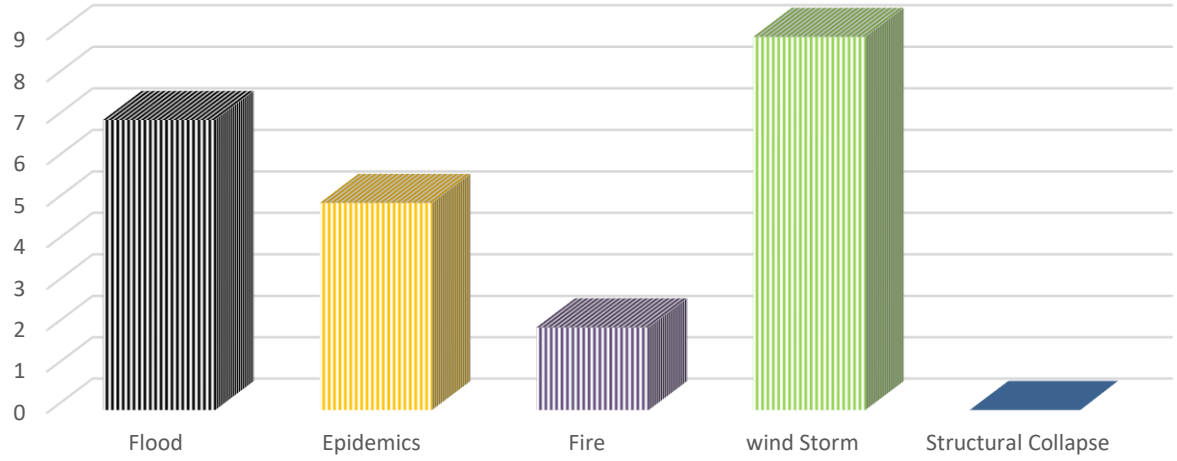
Source: Niger State Emergency Agency 2017



Source: Field Survey (2017)

Figure 2: Number of Reported Disasters Cases in Shiroro Local Government

Table 2 and figure 2shows number of disasters reported from 2012-2016 in Shiroro local government: In 2012 the local government experienced five (5) and two (2) Wind storm and flood respectively. In 2013 the local government only experienced one disaster (flood). In 2014 the local government experienced one (1) epidemics and flood disaster respectively. In 2015 and 2016 the local government experienced that disaster: one wind storm and fire disaster respectively. This implies that wind storm is the prevailing disaster in Shiroro local government.



Source: Field survey 2017

Figure 3: Number of community affected by disaster from 2012-2016

Figure 3 above shows a graphical percentage of community affected by disaster from 2012 -2016 in Shiroro local government. 39% of community are affected by Flood, 22% of community are affected by Epidemics, and 9% of community are affected by Fire. This implies that windstorm affected more community in Shiroro local government.

Research Question: What are the Prevalent Disasters in your Community?

Table 3: Prevalent Disaster in Kuta and Gurumana community

Disaster	Kuta	Gurumana	Total	Percentage
Flood	18	75	93	23.3
Epidemics	2	6	8	2
Fire	8	1	9	2.2
wind Storm	172	118	290	72.5
Structural Collapse				0.5
		2	2	
Total	200	200	400	100

Source: field survey 2017

Table 3 above shows 400 respondents view on the question what are the prevailing disasters in their community. 18 and 73 respondents (i.e. 23.3%) in Gurumana and Kuta (respectively) community say it is flood, 2 and 6 respondents (i.e. 2%) in Gurumana and Kuta community says it is Epidemics, 8 and 1 respondents (i.e. 2.2%) in Gurumana and Kuta community say it is Fire, 172 and 118 respondents (i.e. 72.5%) in Gurumana and Kuta community say it is wind storm,

while only 2 (i.e. 0.5%) respondents from Gurumana say it is structural collapse. This implies that wind storm is the prevailing disaster in shiroro local government.

Source field survey 2017

Plate 2: a picture showing interior of a classroom in central primary school Guruman

Source field survey 2017

Plate 2: a picture showing a classroom affected by windstorm in Central Primary School Gurumana

Source field survey 2017

Plate 3: pictures showing some of the buildings affected by wind storm in Kuta community

4.3 Effects of Early Warning Systems on disaster management in Shiroro Local Government

The effects of early warning can either be positive or negative. This research looks at both the positive and negative effect of early warning system in Shiroro local government.

Research question: What are the effects of Early Warning Systems on disaster management in Shiroro local government?

Positive effects	Kuta	Gurumana	Total Frequency	Percentage
It allows prompt actions	81	111	192	48
It saves lives	23	26	49	12.3
It protects the environment	15	14	29	7.2
It protects farmlands	46	30	76	19
It protects properties	35	19	54	13.5
Total	200	200	400	100

Table 4:Positive Effects of Early Warning Warnings on Disaster Management

Source: field survey 2017

Figure 4 and table 4 above show a graphical representation 400 respondents on the questiion what are the positive effects of early warnings on

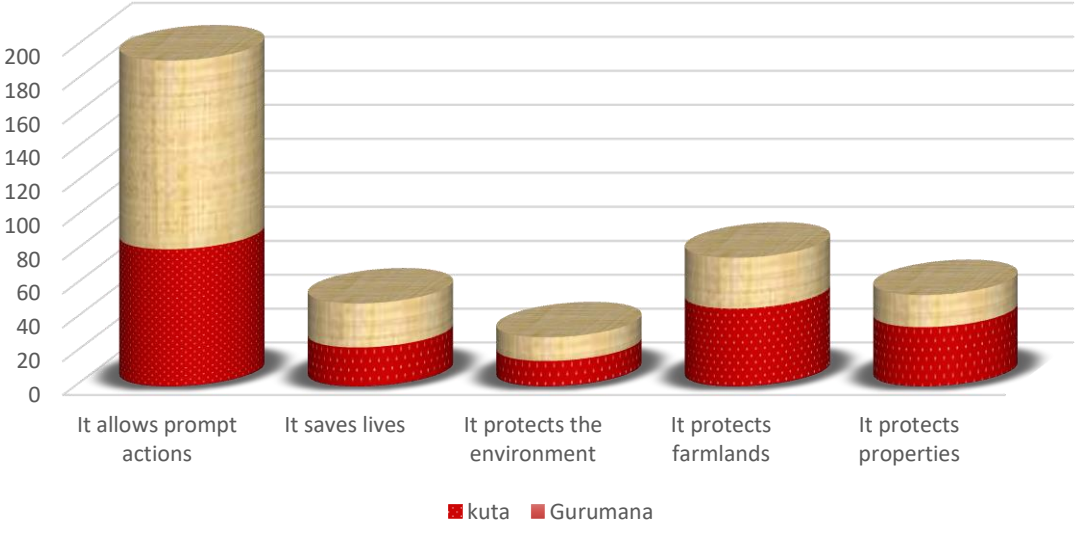


Figure 4: positive effects of Early Warning Systems on Disaster management

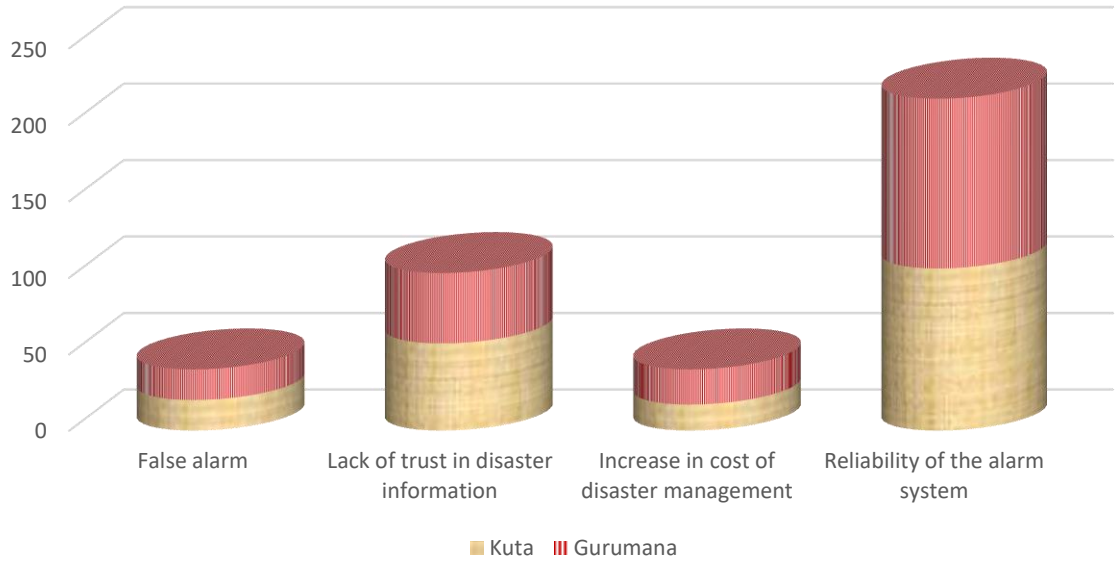
INFORMATION LOCAL GOVERN

Negative Effects	Kuta	Gurumana	Frequency	Percentage
False alarm	20	20	40	10
Lack of trust in disaster information	57	46	103	25.7
Increase in cost of disaster management	17	23	40	10
Reliability of the alarm system	106	111	217	54.3
Total	200	200	400	100

Source: field survey 2017

Table 5: Negative Effects of Early Warning System on Disaster Management

disaster management in Kuta and Guramana community: 81 and 111 respondents in Kuta and Guramana say it brings about prompt action: 23 and 26 respondents in Kuta and Guramana says it saves the environment: 15 and 14 respondents in Kuta and Guramana says it protects farmland: 35 and 19 respondents in Kuta and Guramana says protects properties in the community. This implies that majority of the respondents are of the opinion that early systems brings about prompt action



Source: Field survey 2017

Figure 5: Negative Effect of Early Warning

Figure 5 and table 5 above show a graphical representation of 400 respondents on negative effects of early warning systems on disaster management in Kuta and Guramana community: 20 and 20 respondents (i.e. 10%) in Kuta and Guramana say it brings about false alarm: 57 and 46 respondents (i.e. 25.7%) in Kuta and Guramana says it brings about lack trust in disaster information: 17 and 23 respondents (i.e. 10%) in kuta and Guramana says it is increase cost of managing disaster: 106 and 111 respondents (i.e. 54.3 %) in Kuta and Guramana says it is reliability of the alarm system. This implies that majority of the respondents believed that the negative effect of early warning system is reliability of alarm system.

Conclusion

The most used early warning systems in Shiroro local government is community based meeting. This meeting is usually conducted by the community heads and religious leaders who relay

the message obtained from emergency agencies to the community at large. Looking at the prevalent disaster in Shiroro local government: the result from the field survey and the number of disasters reported to emergency agencies from 2012-2016, it became obvious that windstorm is the prevalent disaster in Shiroro local government.The findings of this study also show that major positive effect of early warning on disaster management is that it allows the community to take prompt action before disaster happens. The result also shows that the major negative effect of early warning system on disaster management is reliability of alarm system. Reliability of alarm system always makes the community to have nonchalant attitude towards disaster management

Recommendation

Based on the findings of the study, the researcher recommends the following:

1. The community should work with Niger state environmental protection agency, in planting of trees and other environmental protection techniques that can mitigate or prevent wind storm in Shiroro local government.
2. The emergency agencies in Niger state should ensure that there is a well-organized and structural community based meeting, in each of the communities in Shiroro local government where the communities can be sensitized, educated and trained on the recent and most effective ways of managing disaster.
3. The government of Niger state should provide the communities in Shiroro local government, with more infrastructures such as good road, telecommunication network, electricity and good water supply so as to reduce their vulnerabilities, increase their resilience level to disaster and increase existing early warning systems.
4. Law regulating building of houses should be implemented and effective in shiroro local government, in other to put a check on the quality of buildings and roofing in shiroro local government and Niger state at large.
5. The local emergency agency should provide a multi means of disseminating disaster information ranging from local means (town criers, festival, drama, songs)to modern means such as social media, geographical information system, remote sensing

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