Analysis of Strategies Utilized and Their Adequacy in Communicating Early Warning Messages For Disaster Preparedness in Tana River County, Kenya

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Abstract: This rearch was conducted in Tana River County Kenya. Early warning communication is a branch of crisis communication that has been adopted into community knowledge and practice for disaster preparedness. There are, however, concerns that in many cases, early warning on impending disasters has not translated into appropriate and timely actions towards saving lives and livelihoods. While early warning is known to be necessary for reducing disaster losses, studies indicate that early warning communication does not necessarily lead to early and appropriate response from the target communities. The objective of this study was to evaluate the dissemination strategies used to communicate the messages to the community and their adequacy in communicating early warning to the community. Qualitative approach to the research was used where interview schedules and focus group discussions were adopted in data collection method. A sample of 25 respondents were interviewed, three focus group discussions were held and seven key-informant interviews were carried out. The study used purposive and snow ball sampling procedures. The data obtained was transcribed and analysed for themes relevant to the topic. The study found that there are considerable weaknesses in dissemination strategy by institutions charged with the early warning communication, The study recommends that there is need for communicators of early warning messages to look at the design of the messages on flood warnings and to take into consideration the three elements of early warning communication, which are forecasting, dissemination and response. It is envisaged that the findings of the study will be helpful to the communicators of early warning messages to reconsider strategies of communication. The findings will also assist in guiding the formulation of future disaster management policy.

Keywords: Adequacy, communicating, Disaster preparedness, Early warning messages, Strategies.

I. INTRODUCTION

Shafiq and Ahsan (2013), define disasters as either man-made or natural hazards that disrupt the functioning of communities, causing widespread human, material or environmental losses that exceed the abilities of affected communities to cope. Disasters are worldwide phenomena that should be communicated and relevant knowledge shared. The challenge remains to not only respond with accurate, understandable and complete information as quickly as possible during a disaster, but also to communicate in a proactive way that involves members of communities to reduce the potential risk of a disaster. Floods are the rise in the amount of water discharge causing overflowing of a river or any other water body onto areas not normally submerged (UNEP, 2012). This may occasion an occurenec of a disaster. One of the major causes of floods is heavy rainfall that leads to water level in the river to rise above the banks and overflow. Skinner and Rampersad, (2014) explained that communication planning during disasters should occur in an institutional and

organizational context with specific mandates. Early warnings of flooding risk is effective in reducing flood related deaths as evidenced by only seven people losing their lives in five successive hurricanes in 2008 in Cuba, as compared to hundreds of lives in previous years. (Malilay, 1997). Early warning communication enabled people at risk to evacuate quickly to emergency shelters. Ineffective communication leads to lack of adequate information on hazards and results into disasters if not prevented or controlled with the ultimate consequence being losses of lives and livelihood. According to Grasso and Singh, (2011), there is inadequate communication of flood warning, especially in developing or least developed countries.

The World Meteorological Organization (WMO) explained that challenges such as shifting seasonal rainfall and rise in climate variability result in flood events and droughts (UNEP, 2012). Heavy rains that lead to floods cause devastation and kill many people worldwide compared to other natural disasters (WMO, 2010). The accompanying economic losses of these disasters are high. Every year natural disasters claim about 100,000 lives (UNEP, 2012). Flooding in the Tana Delta is a recurrent problem. As a result, thousands of people have been displaced and property either damaged or destroyed. DesInventar, a UNISDR database for disaster information, alludes to the fact that between the year 2006 and 2013, 3,770 houses were destroyed and 101,772 people affected in Tana River County as a result of floods. The World Bank publication, (2006), recorded that in 1997, 1998, and 2013 there were floods causing major displacement, water borne diseases, destruction of livelihood and structures along the riverine flood plains of the Tana River Delta.

Communication Strategies for Disaster Management:

A communication strategy is "a well-planned series of actions aimed at achieving certain objectives through the use of communication methods, techniques and approaches" (Mefalopulos and Kamlongera 2004, p. 8). This definition implies that the basic element to strategy is planning. A communication project, especially one in which the success of the project can mean the difference between life and death for another person, for example, in a flood situation, is not absolved of this necessity. Communication of climatologically, geological and technological hazards, risk and disaster information and warnings to the public are better communicated through the application of specific strategies that take into account the human psychology and trigger public response to warnings of disasters (Mefalopulos and Kamlongera, 2004).

Flood Warning Effectiveness and Human Psychology:

There are many situations when flood warnings often fail to be effective and for many reasons including, inhabitants' unwillingness to leave their property, which include house hold items and livestock out of fear of looting and vandalism; the actions of neighbours or weather may contradict the official warning; some people do not follow the dictates of authority and may ignore official advice; some people cannot heed warnings because they may lack the physical or mental capacity to respond, or they may be absent from their dwellings; some of those at risk may not be worried about flooding until they suffer a loss; and populations at risk being very diverse, which mean that they have different priorities, languages and levels of understanding of the flood warning (Plate, 2002).

Therefore, dissemination methods and in particular, warning delivery, receipt and response need to be reviewed so that they are appropriate to trigger action. The messages should focus on educating individuals about the threats or risks that will be brought by the flood, including the likelihood of the disaster occurring, the severity of the disaster and the consequences. Effective early warning communication is based on the understanding of the processes that individuals go through when they make decisions about modifying their personal behaviour. Warning communication specialists need to understand human behaviour in order to design and implement effective warning messages. Such messages should be intended to increase people's knowledge about the chances of the disaster happening and its potential impact on health, well-being and quality of life, in order to change their attitudes so that they feel a sense of urgency and personal responsibility associated with protecting themselves.

The Persuasive Communication Continuum Model:

People's reaction to warnings of an impending disaster is not well characterized by a stimulus response model. However, communication models that lead to behaviour change can be applied. Such a model is the continuum of persuasive communication. The success of a warning rests in the individual's awareness, understanding, and acceptance of their risk (Lindell and Perry, 2004). Effective public awareness programs are based on understanding the process that individuals

go through when they make decisions about modifying their personal behavior (Redmond, 2000). This can be seen through the stages of persuasive communication that leads to behaviour change.
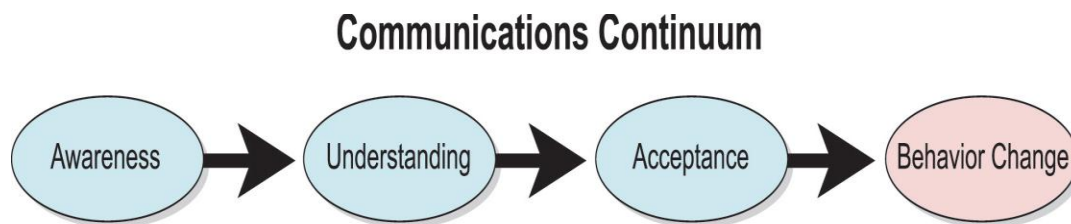

Figure 2.2 Stages of Persuasive Communications

Source: (Redmond, 2000).

Redmond, (2000) asserted that for individuals to heed evacuation warnings, they need to first be aware of the risk. Secondly, they should understand the impacts of the hazard on themselves and their family/community. Thirdly, they need to accept the idea that failure to follow the warning message can result in losses of all kinds. Finally, they need to take action and heed the warning to evacuate. Therefore the communicator should know the intention of the message. If the intent is action (behavior change), then public warnings messages are to focus on moving the public through the initial stages of awareness, understanding, and acceptance in order to achieve behaviour change (Lindell and Perry, 2004). Redmond (2000) asserts that human beings will not respond to flood warnings unless their denial of threat is overcome by sufficiently persuasive evidence of threat. This can be achieved when the messages aim at eliciting a specific response from the public, other than merely raise awareness or provide knowledge. The messages should possibly describe actions that can be taken to mitigate the negative consequences of the threat.

Adequacy of the Messages Communicated:

Handmer (2001) and Glantz (2009) argue that for warning systems to be adequate they should satisfy among others the technical and communication attributes of informative, accuracy, timeliness, trustworthy and appropriateness to the audience. In regard to being informative, warning messages should indicate what the threat is, what action should be taken, by whom and when, in understandable, unambiguous and consistent language. Accuracy refers to the truthfulness or veracity of a given statement by having the facts right. Since warnings are predictions about the future, there is inevitably some uncertainty. However, uncertainties can also arise from the construction and wording of warning messages themselves. Therefore, messages should be constructed in such a way that they reduce uncertainties and inaccuracies to reduce chances of future warnings being ignored. Handmer, (2001) and Glantz, (2009) further argue that warnings messages should allow enough time for appropriate action. This is particularly a challenge for many disasters but mostly flash floods. Similarly, warnings are more likely to be heeded if they come from trusted and reliable sources. The credibility of the source is paramount. Additionally, a consideration should be given to the appropriateness of the audiences. The target audience for a warning consists of many sub-groups, each with its own needs and expectations, preferred way of receiving warnings and own ways of interpreting messages. No one warning source will reach or be understood by everyone. Therefore, warning messages should be designed with the needs and expectations of the ultimate users in mind.

II.   STATEMENT OF THE PROBLEM

The repetitive nature of full-blown disasters in Kenya is an indication that there may be a problem in packaging of flood warning messages and modes of dissemination may not be effective for local communities to respond to disasters appropriately. When this study was conducted, there were no earlier documented studies on early warning communication of floods in the Tana Delta. The present system of government-issued flood warnings is presented in both a context and a format that are poorly understood by the Tana Delta inhabitants and also channels of communication are not affordable by all. It is in view of this that this study aimed at assessing the communication of early warning in flood prone Tana Delta. Further, the study examined the strategies used to communicate early warning messages, establishing the community understanding of the information on an impending flood disaster, and the adequacy of the strategies used to communicate early warnings on floods.

III. RESEARCH METHODOLOGY

This study employed the qualitative aproach where indepth innterview with key informants were conducted, where participants were purposively selected from early warning communicators in Meteorological Department, disaster response officers in NGOs, County officials, administrative and political officers in Tana River delta sub-county, community, religious and women group leaders and coordinators at the disaster management unit in Tana Delta Sub-county.. Further, focus group discussions, which involved heads of households, village elders, religious leaders, women leaders and youth leaders and included men, women and the youth were conducted. Sampling procedure adopted included a combination of purposive and snow balling. The qualitative data obtained in this study, was analysed for themes relevant to the topic in line with the objective.

IV. FINDINGS

Strategies used to communicate flood early warning messages:

The study found out that there were no documented strategies in place for most stakeholders. However the following channels were generally used by the broadcast media (TV, radio and newspapers); government circulars which were used by government officials, SMS, phone calls, and meetings were used. The study revealed that only a few of the respondents received information regarding flood occurrences from television and radio. The study further confirmed that some respondents were aware that television advertisements exist, however, they were unaware that other media forms such as the Internet could be used to access information on weather conditions in their area. From the study it was found that those respondents who used television and radio as sources of information acknowledged the standard weather forecasts during news cast on radio were their main source of weather information and not TV interviews and radio talk shows that were used by National Disaster Operation Centre (NDOC) and Kenya Meteorological Department.

One of the respondents observed that:

"The weather segment on Television (TV) broadcast looks like an afterthought, as it is aired at the very end of the news and there are no interpretations of what it means to a lay man".

The Ministry of Environment, Water and Natural Resources (MEWNR) had an established communication strategy, which Water Resourse Management Authority (WRMA) was implementing. WRMA communicated through an email platform, which they referred to as trending mail, SMS, telephone calls, Open Data Kit (ODK), Integrated Flood Management Committee (IFMC), Water Resource User Association (WRUA) and other media campaigns. However, this communication from WRMA was between the headquarters and the regional offices and a few selected people. The national government did not have documented procedures for communicating but it was a practice that communication flows downwards to the County Disaster Management Committees. Therefore the County commissioner received the information through the government circular and further communicated to the disaster operation agencies, administrative officers and other community based organizations (CBOs). As much as the NDOC engaged in media campaigns through talk shows on TV and radio to sensitize the public on an impending flood, the community did not have access to these channels of communication. The information was received by those who are in urban areas. Chiefs used *baraza (meetings)* and asked the village elders and those who attended the *baraza* to spread the message through the word of mouth. However, not everyone attended the chief's *baraza*. Some respondents argued that *barazas* were held at a time when people are trying to salvage the little they have from the farms, and they have no time to attend the baraza. The women for example would receive the warning messages through the Women's meeting (*Maendeleo ya Wanawake*), however, some of them viewed Maendeleo ya Wanawake meeting as a political group. One of the respondents commented that:

'mikutano ya Maendeleo ya Wanawake ina siasa tupu na mimi si mtu wa siasa' (Such womn meetings are political in nature)

Respondents indicated that there was no formal warning given on flooding before it occurred, which they could refer to specifically.

Adequacy of the Strategies Used in Communicating Early Warning:

The study also assessed the adequacy of the communication strategies used. From the interviews with key informants, it was revealed that the channels used were generally adequate. They included the broadcast media (TV, radio and newspapers), government circulars, Short Message Service (SMS), phone calls, meetings, email platform, trending mail, Open Data Kit (ODK), through the Integrated Flood Management Committee (IFMC), Water Resource User Association (WRUA) and other media campaigns. The District County Commissioner (DCC) indicated that the circulars from the national government were very elaborate. However, one of the chiefs who received communication through Short Message Service and telephone calls felt that it was not adequate; he indicated that the SMS could not carry adequate information and the language used was personal. Further, the Chief in turn communicated through the Chief's baraza, however not everyone attends the chief's baraza. Therefore, the information is passed down by word of mouth where the probability of either losing its original meaning or not being shared was high.

Interviews with the Meteorological Department and WRMA officers established that they hold different understandings and perceptions regarding the adequacy of early warning communication. They argued that the current systems are adequate, however, there is room for further improvement. The Meteorological Department indicated that flood affected villagers are informed through websites, television and radio and by local authorities about an impending flood, however, most of the people in the community do not have access to these channels of communication. An officer from Red Cross, acknowledged that even though they had detailed information on an impending flood and logistical information such as evacuation procedure, that information was not available for the villagers to consume in a way that they can understand better and with a wider reach. The research further revealed that information on flooding and subsequent action to be taken had not been translated into physical tools such as brochures or pamphlets, which could be distributed to the probable affected communities as part of an ongoing flood warning campaign.

V. DISCUSSION

Although natural disasters cannot be prevented, however, their social and economic impacts on lives and property can be considerably reduced with adequate communication of early warning that will result to appropriate response. This study has revealed that members of the community in Tana Delta are affected by floods in such a way that they lost livelihoods (crop and livestock) and property were damaged. In this study, the community members knew about floods and there were various sources of conveying flood information. It came out from the study that the community was not organized to participate in flood management initiatives. Unlike in other flood prone areas like Nyando where there are Community Flood Management Organizations (CFMOs), which are voluntary self-help groups established in the flood prone areas for the purpose of managing flood hazard. There were rain gauges where the CFMOs get information on real-time water levels during the rainy seasons and this enabled alerts to be made to the community. However, such a project had not been established in Tana River Delta. When interviewed the Officer at WRMA, confirmed that in Nyanza region there exists the Gucha-Migori Flood Management project and members were empowered to a point that they can read the gauges and interpret the impact; they have capacity to do data analysis and are able to establish, water level and the number of people who were likely to be affected. Such organized grouping provide structural platform upon which preparedness practices are realized, through rolling-out local flood management initiatives (Mulwa, 1998). The study also established that there is considerable weakness in framing warning messages and dissemination procedure to the community which reduces the effectiveness in enabling the community members to take protective action to reduce the negative impact of floods. The existing modes of dissemination were not coordinated. The study revealed that there was no mutual information sharing among the Government, disaster management agencies, non-governmental organisations, the private sectors, vulnerable communities and the media hence the frequency at which disaster strikes with its destructive impacts. Yet, Warfield, (2008) asserts that communication is the link that ensures collaborative efforts at all levels in order to mitigate, prepare for, responce to disasters and their effects when they occur. This therefore calls for regular pre-disaster contact among concerned stakeholders for proper management to optimize efficiency of planning and response.

The Tana River is dominated by a floodplain, at the upper section of the River there is the Masinga Dam that serves as a water reservoir, while the others Seven Folks dams are hydro-electric stations (UNEP, 2012). From the rsarcher's field observation it was found that some of the factors contributing to flooding include the overflowing of filled up dams as

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well as deforestation leading to exposure of soil to agents of erosion. While in the field, the research observed that Bura farms were flooded at the that time as a result of overflow from the Dams. This observation confirmed that there was no indication of any type of physical warning system in place that directly connects to the community to show that the dams are almost full and the water is likely to overflow into the nearby farms. In my opinion such a warning will communicate and alert the community to respond accordingly. The communication Officer at the Kenya Meteorology Department and an officer from the Water Department at Tana Delta agree that they are part of a systematic structure that can effectively report early warning messages and other weather occurrences for early response. However, it was found that the community, in the flood prone Tana Delta, are not aware of any communication from Kenya Meteorological Department or the water department; according to residents KMD and the water department are almost non-existent.

Flood Warning Strategies:

Warning messages according to Pearson, Nelson, Titsworth, S. and Harter, (2006) should be appropriately designed and clearly stated for a specific audience. According to the findings in this study, there are gaps that exist in the current communication strategies between the community and the organizations involved in disaster management initiatives. Mefalopulos and Kamlongera (2004) argue that disaster information and warnings to the public are better communicated through the application of specific strategies that trigger public response to warnings of disasters. Redmond, (2000) recommends using channels of communication that exist in the community. Therefore there is need for the National and County Governments and the agencies that deal with disaster management to identify or design appropriate information and communication tools or channels that might help to bring the early warning messages to the communities at risk. The warning messages should be designed such that they match information users and information needs through the process of audience analysis. Audiences differ in many aspects, consequently they should be clearly defined (Pearson, Nelson, Titsworth, S. and Harter, 2006). Traditionally, the forecasts or warning messages mainly target stakeholders at national and county levels. However, when floods are approaching severe conditions national, warning messages should be produced for the use by those at risk. This study reveals that the traditional forecasts and warning message did not fully correspond to the needs of those at risk in Tana Delta, but to the stakeholders.

Persuasive Warning Messages:

Assessing the efficiency of warning messages will enable communicators to employ communication strategies that trigger a response. Redmond (2000) argues that people will not respond to flood warnings unless the messages elicit a specific response other than merely raising awareness or providing knowledge, while Handmer, (2001) asserts that if people at risk are to take action, then warning messages must mean something to them. The objectives of flood forecasting and warning are to enable and persuade people and organizations to be prepared for the flood and take action to increase safety and reduce damage. Flood warning can be seen as a social construct, since the warning message usually serves as a starting point for individuals and groups to make decisions and take protective actions when confronting the flood threat. For those residents who would generally not take action even after the warning messages have been communicated like the pastoralists who indicated they would rather die with their animals, the warnings should focus on actionable messages that residents can quickly understand the risk. The receivers should understand the meaning and relevance of warnings, how they relate to their lives in order to respond appropriately.

In addressing the recipient's apathy, Mileti, (1995) argues that those designing warning messages should take into account the social psychology process of the receivers in order to foster pre-disaster protective actions. In this case the perceptions of the farmers and the pastoralists should be put into consideration. The social psychology process is divided into several phases as follows, hearing a warning; forming a personal understanding of what was meant by the warning; developing a level of belief in the risk information conveyed in the warning; personalizing the risk; and deciding on what to do and responding in ways thought to be appropriate for the risk personally faced (Mileti, 1995). Since people respond to warnings through a social psychological process, planning for effective public response to disasters mean that this social and psychological process need to be understood and addressed by those who disseminate warnings to those at risk. Similarly, the communicators should also consider the warning factors that influence public response. These factors include warning sources, warning message consistency, message accuracy, warning clarity, certainty of the message, sufficiency of the information, guidance on action(s) to be taken, warning frequency, risk location information and the communication channel (Mileti, 1995).

VI.   CONCLUSIONS

Today, every nation is at risk of exposure to some type of disaster, whether natural or man-made. To prepare for those disasters, citizens and especially those at risk need to be informed about the impending disasters and how they can effectively prepare to mitigate the potential impacts of a disaster. Therefore empowering the people through dissemination of disaster related information about the various types of disasters and their potential risks enables them to act appropriately when a disaster occurs. From this study, it is acknowledged that dissemination of flood warning is a challenge to both flood forecasting authorities and flood prone communities. The whole process of dissemination can be addressed by four main considerations, that is, identifying the target audience; construction/designing of warning messages; distribution of the warnings to the people (channel) and assessing warning efficiency (impact and feedback assessment).

VII.   RECOMMENDATIONS

In order to reduce the level of disaster occurrences, the communities ought to be adequately aware of an impending flood and ways of protecting themselves against the disastrous effects of a flood. This study recommends that warning messages should be detailed and clear. Different communication strategies should be used to disseminate flood related warning messages and the warnings should focus on actionable messages that residents can quickly put in place. The messages should possibly be translated into local language. There is also need to develop a strong governance framework through legislation and policies and mainstreaming disaster risk management into decision making at all community development plans.

REFERENCES

[1] Glantz, M. H. (ed.) (2009). Heads Up! Early Warning Systems for Climate, Water and Weather-Related Hazards, United Nations University Press, Tokyo.

[2] Grasso, V. F., & Singh, A. (2011). Early warning systems: State-of-art analysis and future directions. Draft report, UNEP.

[3] Handmer, J. (2001). 'Are flood warnings futile? Risk communication in emergencies'. The Australasian Journal of Disaster and Trauma Studies, vol. 2000, no. 2.

[4] Lindell, M. K., & & Perry, R. W. (2004). Communicating Environmental Risk in Multiethnic Communities. London, UK: Sage Publishing Inc.

[5] Malilay, J. (1997). Floods. In NojiEk, ed. "Public Health Consequences for disasters". New York, NY, Oxford University Press, pp. 287-301

[6] Mefalopulos, P., & Kamlongera, C. 2004, Participatory Communication Strategy Design, Food and Agriculture Organisation, United Nations, Rome.

[7] Mulugeta, G., Ayonghe, S., Daby, D., Dube, O., Gudyanga, F., Lucio, F., & Durrheim, R. (2011). Natural and human-induced hazards and disasters in sub-Saharan Africa.ICSU Regional Office for Africa

[8] Pearson, J., Nelson, P., Titsworth, S., & Harter, L. (2006). Human communication, 2nd Edition. Boston: McGraw Hill.

[9] Phillips, B. D. (2014). Qualitative Disaster Research. Oxford University Press

[10] Plate, E. J. (2002). Flood risk and flood management. Journal of Hydrology,267(1), 2-11.

[11] Redmond, M. V. (2000). Communication: theories and applications. Boston: Houghton Mifflin.

[12] Somekh, B., & Lewin, C. (2005). Research methods in social sciences. London: Sage.

[13] Shafiq, F., & Ahsan, K. (2013). Knowledge Management for Disaster Scenario: An Exploratory Study. Research Journal of Recent Sciences

[14] Skinner, C., & Rampersad, R., (2014), 'A revision of communication strategies for effective disaster risk reduction: A case study of the South Durban basin, KwaZulu-Natal, South Africa', Jàmbá: Journal of Disaster Risk Studies 6(1),

[15] United Nations Environment Programme (UNEP), Government of Kenya (GoK), Regional Centre for Mapping of Resources for Development (RCMRD) and United States Geological Survey (USGS), (2009), Kenya Atlas of Our Changing Environment

[16] World Bank (2006). Natural disaster hotspot: case studies. Working paper series 5. Washington DC: World Bank Hazard Management Unit.

[17] World Meteorological Organization. (2010).Weather Extremes in a Changing Climate. [Online] [Accessed 17 April 2015].