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Community Engagement Strategy for Coping with Effects of Flood Disasters: A case of Bor in Jonglei State, South Sudan

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The occurrence of flooding in the East African region has increased over the past twenty years. This has come with a lot of public health risks and loss of lives and livelihoods among the communities affected. South Sudan is one of the African countries prone to flood disasters. Jonglei State is one of the states that are frequently hit by flooding because of its proximity to river Nile. Bor County in Jonglei State is reported to be experiencing the highest rate of flooding in the country with devastating effects on the livelihoods and public health patterns. The study employed a qualitative study using Focus Group Discussions (FGDs) and Key Informant Interviews (KIIs) to explore Community Engagement Strategies for coping with effects of flood disasters in Bor, Jonglei State. The study established that some of the coping strategies against the impact of flood disasters adopted by the communities in Bor were positive as they helped in improving the general wellbeing of the communities. These coping strategies include diversification of livelihoods, use of traditional knowledge to predict weather forecast, getting donations in terms of money and materials from funders such as NGOs and government and use of modern techniques of farming. However, some of the coping strategies were regarded negative and not effective. These include building temporary shelters, constructing dykes from mud instead of using concrete, and displacement of people.

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INTRODUCTION

It is estimated that Africa and Asia are the most vulnerable continents to flood disasters in the world. Flooding has caused over 6 million deaths worldwide (Swapan, 2016). The occurrence of flooding in the East African region has increased over the past twenty years (Jha et al., 2020). This has come with a lot of public health risks and loss of lives and livelihoods among the communities affected (Burkle, 2021).

South Sudan is one of the African countries prone to flood disasters. Jonglei State is one of the states that are frequently hit by flooding because of its proximity to river Nile. Bor County in Jonglei State is reported to be experiencing the highest rate of flooding in the country with devastating effects on the livelihoods and public health patterns (UN, 2020). The most reported effects of flooding include the following; destruction of livestock, farmland, infrastructure, property, and businesses and in extreme cases loss of lives (Tiitmameer, 2019). If communities experience sustained flooding for long, they become broken with disruption in education systems, poverty, malnutrition, and diseases leading to secondary effects such as the outbreak of pandemic, famine, and conflict.

Past studies have indicated that there a number of conditions that expose people, institutions, and infrastructure to flood disasters. They include; settling along the bank of the River Nile, lack of knowledge on management of flood disasters, lack of capacity to withstand flood disasters, and nature of houses (mainly muddy and grass thatched) (Gaillard, 2020). In the event of the occurrence of flood disasters, the most vulnerable section of the population affected are usually women, children, elderly and disabled. These sections of the population are vulnerable because they are physically and mentally weak.

In the East African region, local communities in countries like South Sudan, Rwanda, Uganda, and Ethiopia have adopted certain coping strategies. Coping strategy means rallying together your collective efforts, strengths, and resources available within your means as a community to

avert the negative effects of flood disasters so as to minimize shocks and stresses (Kenny, 2019; Burkle, 2021; Katsuhama & Grigg, 2020). For example, Pre-emptive relocation to areas considered safe, construction of permanent dykes, innovative farming practice among others are good coping strategies commonly used in the face of a disaster.

In South Sudan, the Ministry of Humanitarian Affairs and Disaster Preparedness has a policy on disaster management that calls for relief assistance and resettlement when eminent risk is expected (Ministry of Humanitarian Affairs Report, 2021). However, implementation of these policies is largely inadequate. This possibly points to limited financial capacity and human resource necessary for disaster management.

Considering the current trend of climate change, it is expected that flooding in Jonglei State, and particularly in Bor, will increase, and communities will continue to be exposed to the devastating effects of flood disasters (Ministry of Humanitarian Affairs Report, 2021). However, there is limited research on coping strategies to the impact of flood disasters in Bor in Jonglei State. The findings in this study have been intended to provide knowledge on the kind of effective community engagement strategy to adopt in order to cope with flood disasters. This is good for the resilience of the community to such disasters that continue to plague the region.

METHODOLOGY

Study Setting

The study was conducted in two payams of Bor County in Jonglei State. These two payams are Makuac and Bor. Bor County is one of the eleven counties of Jonglei State with population estimated to be over 327,000. This study area was chosen because it is the area hit most and with frequency of flood disasters. Last year in 2020, over 400,000 people were displaced. Thousands of homes were destroyed; dykes constructed along the Nile collapsed. The population in this area engages in various economic activities that include fishing, agriculture, cattle keeping, and

medium- and small-scale businesses. Bor County is ranked the second largest economy after Juba in South Sudan. Flooding has constantly caused disruptions to livelihood patterns and local economy among the local population.

Study Design

The study employed a qualitative study using Focus Group Discussions (FGDs) and Key Informant Interviews (KIIs) to explore Community Engagement Strategies for coping with effects of Flood Disasters in Bor, Jonglei State.

Selection of Study Participants

Sixteen (16) research participants were involved in two (2) FGDs with each group comprising of eight members. The FGDs were drawn from the community members in two payams¹ of Makuac and Bor with a good knowledge of the dynamics related to flood disasters in Bor, Jonglei State. The participants were aged 18 years and above. Two (2) FGDs were conducted respectively in two payams: one with males and the other with females. Fifteen Key Informant interviews were conducted in addition to FGDs.

Data Collection

This research provides an exploration of the community engagement strategies in coping with effects of flood disasters in Bor. The target areas of this study were Makuach and Bor Municipal Council because these are the areas consistently worst hit by flood disasters, and situated near White Nile, which is the main source of flood waters. In each of these two payams, we conducted one FGD.

The interview and FGDs guides were translated into the local languages and pretested in a similar setting in order to get feedback on questions that were not clear. The researcher participated in the

data collection process with the help of research assistant.

During interviews, we asked open-ended questions followed by targeted questions in predetermined categories. The interview guide focused on community engagement strategies to cope with the effects of flood disasters in Bor, Jonglei State. The FGDs and KIIs were audio-recorded with consent.

Data Management and Analysis

All the FGDs and KIIs were transcribed verbatim; those in the local languages were translated without altering the meaning. All the FGDs and KIIs were transcribed verbatim, and those in the local languages were translated without altering the meaning. A conventional content analysis approach was used as described with codes and categories arising from the data. Analysis was done in two stages, first, the manifest content analysis and then the latent content analysis. The transcripts were read and re-read by the authors to achieve immersion. Text data was read to derive codes by highlighting emerging factors based on our understanding of the data. Codes were sorted into categories based on their linkages. The categories were grouped into meaning overarching themes, which is positive coping strategies and negative coping strategies in the face of flood disasters in Bor.

PRESENTATION OF THE FINDINGS

The findings have been categorized in two thematic areas derived from the data collected namely; the community engagement strategies of coping with effects of flood disasters and factors that lead to vulnerability to flood disasters. Accounts from various responses by participants through Focus Group Discussions and Key Informants have been captured and placed in either of the themes.

Floods disasters have frequently hit Bor County. Focus Group Discussions and Key Informants

¹ Payam is a local administrative unit in a state, which is the smallest unit. Bor County is sub divided into Payams that include Makuac and Anyidi

have been successful in providing descriptions to a number of coping strategies adopted by the community to manage the adverse effects of flooding. Four Focus Group Discussions (FGDs) and Key Informants (KIIs) reported numerous coping strategies that included construction of dykes, relocating to areas far from the banks of the White Nile River, tree planting and terracing, Regular Flood Disaster Awareness campaigns. These coping strategies have been labelled as positive coping strategies.

In the reports provided by key informants, regularly awareness campaigns and training by various national and international organizations helped the communities significantly in coping with effect of flood disasters.

One key informant stated,

“Our community here in Makuac has always received visitors from SAADO. They come here to train us on how to be resilient whenever flooding occurs. They teach us tricks of spotting signs of flooding that would be devastating so that we can relocate to the safe areas before worst come to worst”

This point was echoed by another key informant: “Yes, NGO workers are here in Bor, they always do awareness campaigns on the dangers of flooding, and what to do when flooding comes”

The findings establish that support from external sources such as from NGOs and government has been crucial in building capacity of the community in coping with flood disasters. Majority of responses came from Key Informants and Focus Groups, and they pointed to support from the NGOs and government. The support, according to those responses, has been in the form of supplying materials for building dykes, providing relief aids to the displaced and tree planting.

One key informant stated,

“Ministry of Forestry and Agriculture in Jonglei State has been supplying seeds and seedling for tree planting. Besides, they have

been providing us with Pangas, Hoes, etc to clear land whenever we relocate”

The participants reported basic income-generating activities helped improve household income, and they included trading, livestock rearing, poultry keeping, and so on.

One key informant stated,

“You know very well that flood disasters distort our normal patterns of livelihoods. We always resort to flexible income generating activities like trading, poultry farming, fishing etc to cope with crisis related to disasters”.

Another Key Informant stated, “We trade, we do fish and do agrarian work so as to cope with crisis associated with flooding”.

As one of the coping strategies, most of the key informants reported that communities in Bor depended on the system of tradition knowledge for recognizing flooding in the risk assessment, weather forecast and early warning. Some signs show that the water levels are rising that could cause flooding such as appearance of cracks on land near bank of the river. A key informant state:

“When people notice cracks on lands near the river, they immediately begin to detect that there will be flooding, and as a result they relocate before time. Some report the problem to the local authorities known as state authorities” (Key informant, Bor Manucipal Council)

In the perspective of resilience, some of the means to cope used in managing the effect of flooding are not often effective. They include relocation to safer area, maintenance of infrastructure. Most of the participants in Focus Group Discussions reported that infrastructure rehabilitation activities such as digging dykes, digging trenches, embankment, creating water channels, and so on, tend to be unsustainable in curbing the effects of flood disasters. They stated that when flooding is too much it sweeps away every including the destruction of road networks.

The dykes that we have built and the trenches dug have always failed because floods can easily wash them away. Even roads have been destroyed. (FGD, Makuach)

Even though majority of participants in Focus Group Discussions (FGD) considered relocation as a positive way to manage the effects of the flood disasters, it is worth pointing out that some of the displaced victims, families still return to high-risk areas due to cultural, emotional connection associated with those places. Sometime, funding challenges and failures forced people to return to high-risk areas.

"We return lands that we consider as land of our ancestors, where we born and raised up. We do not want to be disassociated with it. Besides, they are the base of our livelihood. We have buildings there. We cannot leave the place that". (Key informant, Bor Manucipal Council)

"We cannot leave behind our river where we have been doing the fishing from since we were young. Getting far away from this River Nile means detaching ourselves from the means of livelihoods. We must go back" (Key Informant, Bor elder)

Factors Causing Vulnerability to the Effects of Flooding in Bor

The study finds that the factors that cause vulnerability to the adverse effects of flood disasters in Bor are cultural and socioeconomic. Most of the study participants from Focus Group Discussions (FGDs) and Key Informant (KIs) reported that the causes of vulnerability include poor infrastructure, poverty, population pressure and land pressure. Participants from FGD and KIs consistently reported that poverty is the main cause of vulnerability and susceptibility to flood disasters. For their narratives, communities complained of lack of money to build dykes, relocate or do farming. In that sense, they have always been vulnerable. The patterns of settle such building temporary, grass thatched houses clearly indicated the level of poverty is high among the population in Bor.

One key informant stated,

"People here in Bor are very poor; they cannot even afford the basic necessities of life. They cannot mobilize resources to build dyke, repair roads and relocate people to safe zones. So, poverty is our biggest obstacle in managing adverse effects of flood disasters".

Another key informant stated,

"Cheap materials used in the construction of dykes and roads are easily washed away by heavy rains and floods. It is because we lack the money to buy durable materials" (Key Informant, NGO)

Half of the participants from Focus Group Discussions reported that shortage of land and populations as negative factors that indirectly cause flooding

DISCUSSION OF FINDINGS

The study established that some of the coping strategies against the effects of flood disasters adopted by the communities in Bor were positive as they helped in improving the general wellbeing of the communities. These coping strategies include diversification of livelihoods, use of traditional knowledge to predict weather forecast, getting donations in terms of money and materials from funders such as NGOs and government and use of modern techniques of farming. However, some of the coping strategies were regarded negative and not effective. These include building temporary shelters, constructing dykes from mud instead of using concrete, and displacement of people.

Coping mechanisms used by the local communities to overcome the effect of flooding in Bor include tree planting, constructing dyke and diversification of economy. In the past studies, it has been reported that these practices were very effective in significantly reducing the negative effects of flood disasters and that they should be adopted and promoted (Tiitameer, 2019). However, community engagement strategies such as flood disasters awareness campaigns are very helpful in mitigating the harmful effects

(McDonnald, 2019; UN Report, 2021). Some studies have also emphasized the needs to create educational programs on climate change and disaster management in order to increase the knowledge and technical skills that are associated with disaster management (Relief web, 2014; IPCC, 2014). When people are well informed and equipped, they can be aware that they are at risk, and thus promoting community resilience. Communities that are illiterate and not well-informed suffer adversely from the worst effects of flooding such as loss of lives, mass displacements, and destruction of farms among others (UN FOA Report 2021; IPCC, 2014). Therefore, disaster awareness at the community, individual, or organization level can be a good community engagement strategy that should be adopted widely as an effective tool to mitigate disasters associated with flooding.

Previous studies have also shown that support from external sources such as government, NGOs and international donors has been instrumental in building the capacity of the local communities in overcoming the effects of flood disasters (Ministry of Humanitarian Affairs, 2020). The ministry of humanitarian affairs of South Sudan together with other partners such as UNDP, USAID, UNFOA and UNWFP has been playing a role in providing money and food aid to the victims. Some of the disaster management activities by the government include training and early warning to ensure preparedness.

However, it should be noted that policy on disaster management by the ministry of humanitarian affairs of South Sudan has shifted its paradigm from response-orientated to preparedness and mitigation as one of the effective mechanisms in overcoming the increasing negative effects of hazards that accompany population growth, development, and climate change (Ministry of Humanitarian Affairs, 2020).

The study found out that the positive coping mechanisms used by the local communities to cope with financial difficulties included diversification of livelihoods such as setting up retailed shops, cattle keeping and poultry work.

The reasoning behind the diversification of livelihood by the local communities is to be able to put food on the table in the face of flood disasters. According to Tiitmameer, 2019, flood disasters come with a lot of shocks and stresses, and in so doing money helps in the management of such crises.

In Sub-Saharan Africa, communities employ diversification of livelihood and economy in rural areas and among the rural communities because of the disasters associated with climate change such as flooding and landslides (Tiitmameer, 2019; Diao et al, 2019). This leaves the local government administration with no option but to provide support to the livelihood activities by the communities because are deemed to be playing a role in addressing the underlying vulnerability like poverty.

The study also indicated that traditional knowledge systems were used to assess risks, weather patterns, early warnings, and foreseen disasters. In regard to this, past studies done in different countries in Sub-Saharan Africa have indicated that coping strategies that are traditional have been significantly successful in shaping the understanding of most of the disaster's phenomena (IPCC, 2012; UNFOA Report, 2019). Traditional knowledge of weather patterns can help in disaster management, prevention, and preparedness. In the past studies in Bor, Jonglei state and other parts of South Sudan and East African region at large, the understanding of flood disasters was shaped by cultural and religious factors with the assumption that you can predict disaster by nature of the clouds in the sky, cracks on the surface, rising levels of water and so on. Indigenous Knowledge has evolved and is based on observations and experiences passed on through many generations (IHHD Report, 2015). These traditional assumptions make it difficult to make accurate predictions, and this increases vulnerability. So, there is need to integrate the indigenous knowledge system with modern one to accurately make informed decision by practitioners, communities, and policy makers.

The findings also show that some strategies used by the local communities were ineffective and negative in mitigating the effects of flood disasters. These strategies include relocation to other areas, building traditional grass thatched houses, building muddy dykes and so on. These are not sustainable because local communities would always be getting to their ancestral areas which are regarded as high risk. The possible explanation for this could partly be due to strong cultural ties or attachment to the land, fear that their land was going to be grabbed and the high costs associated with moving (Gaillard, 2020). In Sub-Saharan Africa, the countries where displacement has worked are Ethiopia and Somalia, but other countries such as Uganda have had a situation where displacement is unsustainable (Gaillard, 2020).

From this study, the underlying causes of the vulnerability were reported as; population explosion, poverty, poor infrastructure, lack of awareness, negative cultural beliefs, and lack of knowledge.

It was established from the study that poverty is one of the factors that cause vulnerability to flood disasters in Bor, Jonglei State. This is similar to a report from a past study in South Sudan and other East African countries that gives illustration that poverty and flood vulnerability are linked (Tiitmameer, 2019). The explanation behind this correlation of poverty and vulnerability is that poor people lack the capacity for preparation and disaster management, thus increasing the vulnerability -income communities have been shown to suffer the highest risk of disasters because they live in poor-quality housing and in informal settlements that are prone to floods and landslides (UN Report, 2021). This is because they are powerless cannot afford measures to lessen the effects of disasters (UN Report, 2021). Therefore, the option can be that diverse approaches may be required backed up by modern technology to counter the effects of flood disasters (Tiitmameer, 2019).

The study also shows that insufficient infrastructure like communications networks,

roads, health centres, schools and market are in part the cause of vulnerability to effects of flood disasters in Bor. In other developing countries in Africa like in Zimbabwe, it was reported lack of basic infrastructure exposed communities to vulnerabilities caused by extreme weather such as heavy flooding (Floodlist, 2021). All the mitigation strategies from across have to be adopted and applied in the local situation of Bor. Priority should be given to the rehabilitation of basic infrastructure such as roads, airports and so on.

In the study, it was revealed that lack of knowledge on disaster management and preparedness in mitigating the harmful effects of flood disasters increased vulnerability. This study echoes reports done in some countries in Sub-Saharan Africa that state that poor countries, because of poverty, lack capacity to promote community awareness about flood disasters and other climate disasters (Floodlist, 2021; Andrulis et., 2011; Werz, 2012; Wilson, 2015). Therefore, local communities have to be taught with knowledge related to climate disasters so that they can cope with negative effects brought about by flooding.

CONCLUSIONS

This study shows that failure to overcome the adverse effects of climate disasters can cause serious dangers to different communities in South Sudan. Heavy flooding leads to loss of live and mass displacement. The most vulnerable section of the population includes women, children, elderly and disabled. The most effective measures known as the positive coping strategies should be adopted, and that include building permanent dykes at the banks of the river, constant training and capacity building, diversification of economy and building of permanent residential houses. The intervention strategies should therefore be more focused on addressing the underlying causes of vulnerability to the effect of flood disasters.

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