

Enhancing Resilience to Recurrent Droughts and Floods in Semi-Nomadic Communities: A Case of CMDRR amongst the Doma Community in Mbire District, Zimbabwe

¹Hannah Nyakio Ndung'u, ²Patsiwe Zaba, ³Everson Ndlovu

¹P.O Box Private Bag, Mbagathi, 00503. Nairobi Kenya., Masters in Administration and International Development, Gender and Development

²Programme Director; CBO Focus, Zimbabwe,

Masters in HIV/AIDS & Rural Development

³Lecturer. Institute of Development Studies (IDS) National University of Science and Technology. 38 Duncan Road, Suburbs, Bulawayo. Zimbabwe,

Master of Science in Disaster Management.

*Corresponding Author

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ABSTRACT

Marginalized communities in Zimbabwe experience recurrent climate threats due to low-risk perception, lack of awareness, depletion of household assets, and marginalization from the mainstream economy. The Doma community has had their livelihoods undermined by recurrent droughts and floods perennially. The study analyzed the causes of vulnerability and evaluated approaches employed by CBO Focus in building community resilience to hazards in this community in Mbire district. A case study design was employed. Focus group discussions, interviews, and community hazard mapping were used as data collection tools during the assessment. Training, sports, theatre arts, and functional adult literacy approaches were used in building resilience to shocks. Village heads, community leaders and the ward councillor led the activities and discussions.

The Doma community is reserved and rarely interacts with outsiders, thus ill-prepared for disasters. Risk perception is low, and they lack the literacy skills to process early warning alerts. Lack of household productive assets and poorly constructed dagga huts that are susceptible to floods increase their vulnerability. Their nomadic practices are limited by national parks and conservancies. This has led to a sedentary life with little agronomic skills. The community produced a draft disaster preparedness plan and has sought collaborations with stakeholders in addition to initiating resilience-building strategies. Scaling up agronomic training, accelerated non-farm economic activities and market linkages will improve resilience to hazards. The integration of traditional knowledge into CMDRR approaches will promote project sustainability and enhance community resilience. Government support through infrastructure development and drafting policies that will promote disaster preparedness is desirable.

Keywords: Community Managed Disaster Risk Reduction, Vulnerability, Climate change, Drought, Preparedness, Community Resilience

INTRODUCTION

Background of the Evaluation Study

The human environment and existing relationships interlinked with community systems of interactions and access to various support services promote the level of a resilient community. This includes existing and functional infrastructures in the community that operate effectively in line with the economy, infrastructures, society, and institutions (Lucy & Katrina, 2018). The convergence of these elements increases the ability of the community to improve and promote resilience (Aldrich, 2012).

When disaster strikes the community systems are interrupted, thus exposing them to risk. Even though everyone is affected by the disaster, the impacts are not evenly distributed. Economically and geographically, developing countries like Africa have been disproportionately affected due to their inherent vulnerability and difficulties in social and economic factors. Similarly, the impacts of disasters are not the same across age groups, and their effects on children and youth which are distinct from those experienced by adults (Akeyo, 2010).

As the largest generation to live on our planet, young people – especially those living in the most marginalized and vulnerable circumstances – are disproportionately affected by the adverse effects of increasing disasters.

Different disciplines and theoretical frameworks reiterate the importance of developing systems that build the capacity to absorb, adapt and ‘bounce back’ from disruptive events (IRGC, 2018). Community mechanisms to cope and withstand disaster shocks relate to how better the recovery path is achieved when everyone is involved. Identification of community capacity to relate and connect to various social issues weaved through the existing skills possessed by youths is essential in building a resilient community (Aldrich, 2012).

Global debate to evert the upward trend of disasters remains a priority in terms of resource commitment and developing global strategies to address mitigation measures. The Paris Agreement on climate change priority objectives (2015-2025) is geared towards increasing and investing in the global efforts of climate changes threatening the world (UNFCCC)

The Sendai Framework for Disaster Risk Reduction strategy adopted in 2015 has four priority areas that present a paradigm shift from managing disasters to identifying risks and managing disasters and having robust preparedness plans to ensure governments and communities are resilient (UNDRR, 2015). Every day, the weather changes and affects how people operate and interact socially due to climate change patterns.

Zimbabwe continues to suffer from natural disasters mainly in the form of drought and flooding (Shamano, 2017). Tropical cyclone Dineo in 2017 left a trail of destruction and killed more than seven people ((Hills & Nhamire, 2017). The effects of disasters have left communities vulnerable.

Disaster preparedness challenges amongst vulnerable communities erode productive assets and traditional coping capacities that support their livelihoods. Low-income households tend to be more vulnerable to disaster risks, due to limited access to the resources needed to recover from disaster losses (GoZ, 2014). The poor have difficulties in placing their dwellings in safe areas, resulting in living in hazard-prone areas (Hoeven et al., 2015). Identifying populations vulnerable to disasters is thus important for disaster risk management and crucial for mitigating their economic consequences (Kawaski, 2018).

The Community Managed Disaster Risk Reduction (CMDRR) approach is widely applied and appreciated

by Development Agencies. It is viewed as a sustainable community empowerment approach that facilitates all-inclusive participation of varied segments of community members, such as women, the elderly, people living with disabilities and youth through community action planning, implementation, monitoring, and evaluation of disaster risk reduction interventions. Using a range of participatory rural appraisal tools, the communities are empowered to analyze, profile priority hazards and suggest mitigation strategies (Hoeven et al 2015).

CBO Focus is a local agency that responded to recurrent flooding and drought disasters in Kanyemba ward, Mbire District, in Mashonaland East Province in 2018. The intervention was a Community Managed Disaster Risk Reduction (CMDRR) project that started at the onset of the rainy season, October – December 2018 period. The project sought to identify factors that contributed to the progression of vulnerability amongst the flood-prone semi-nomadic Doma community and utilised the information to strengthen the resilience of at-risk households in Kanyemba ward, to absorb, recover and adapt to the recurrent shocks and stresses in a manner that protected livelihoods, recovery gains and facilitated support for sustainable community transformation, that is, enhancement of their preparedness to disasters.

This paper evaluates the relevance of approaches adopted by CBO Focus in building community resilience to hazards in Kanyemba ward, Mbire district of Zimbabwe.

Problem Statement

The economic crisis led to a major contraction of the agricultural sector, bringing about a multi-dimensional crisis. The increased frequency and intensity of disasters, majorly attributed to Climate Change and Variability, continue to pose great threats to the productivity of the Doma community in Zimbabwe. It is a low-lying area with an average altitude of 400m above sea level

The area has a high risk of flooding and is classified as highly prone to flooding according to the UNDP 2015 hazard mapping. Agro-Ecological Region IV which is characterized by idiosyncratic climatic crises. Frequent droughts and floods have further exacerbated poverty levels since the predominant economic activity, rain-fed agriculture, is vulnerable to climatic variability.

Low-income productivity. Low levels of education. Poor infrastructure. Doma people who are adapting to agricultural activities lack capacities of understanding the risks around them and required knowledge to reduce the risk. CBO Focus implemented a project to enhance the capacity of the Doma community to reduce the effects of disasters around them. This case study is to capture the relevance of the project and to understand the social connectedness of the Doma people and how it has contributed to disaster risk reduction.

Research Question

How relevant was the project implemented by CBO Focus in Kanyemba ward in mapping out hazards and understanding existing capacities?

How is the social connectedness of the community in the Kanyemba ward improves community disaster risk reduction activities?

How relevant is communication in Kanyemba ward enhancing disaster risk reduction knowledge?

The Case study was guided by the following objectives

The overall aim of the CMDRR project was to build a resilient and safe Doma community in the face of recurrent flood and drought disasters. The study sought the relevance and approaches adopted by CBO

Focus in promoting a culture of safety in the Kanyemba ward. Specific objectives were to:

Map out hazards, community capacities and action plans for promoting disaster resilience building in the Kanyemba ward.

Sensitize and create awareness for the Doma community on the CMDRR approaches and ensure their active participation in disaster risk reduction.

Improve the literacy skills of the Doma community to process messages take action, and plan for recovery in the event of a shock through promoting Functional Adult Literacy.

Improve social connectedness and collaboration between the Doma and other neighbouring communities through sports and theatre.

LITERATURE REVIEW

Types of Disasters and Effects to Community Resilience

The world continues to experience natural and man-made disasters devastating the normal lives of people in different measures. The Emergency Database Event (2021), reported 432 natural disastrous events in the world that took place in 2021 alone. The upward trend of disastrous events is concerning as compared to the average of 357 complex events from 2001-2020 (EM-DAT, 2021 Pg. 2).

The report shows that 223 flooding events happened in 2021 (CRED, 2021). Disasters destroy infrastructure and destabilize the normal life of people and reduce their coping mechanisms for survival. The impact of disasters happening leaves millions of people affected and vulnerable.

EM-DAT, (2021) report shows that between 2001-2020 global annual average of the affected population was 193.4 million compared with 101.8 million in 2021. The trend analysis is evidence of the need to invest more in preparedness and making intentional plans to involve everyone in reducing the risk of disasters.

Information Insurance Institute (2022) report states that in 2016, there were 136 man-made disasters that resulted to US\$8 billion in losses. These man-made disasters are common in fires, accidents such as a migrant boat capsizing killing 776 people, and collapse of a church in Nigeria with 160 deaths reported (Information Insurance Institute, 2022). Terrorism activities have also left thousands of people killed and families devastated (World Bank, 2016).

Man-made and natural disasters in many countries have left people exposed to and in high risk of disasters because of weak structures and governments become overwhelmed in protecting their population (World, 2016). The category of natural disasters such as earthquakes, flooding, cyclones are types of disasters that are rapid and happen instantly. Mozambique, Zimbabwe and Malawi experienced a cyclone disaster in 2019 killing over 1,000 people and 2.6 million people in need of humanitarian assistance (Oxfam, 2020).

Slow-onset disaster is characterized by interlinked factors that are long-term and more specifically related to climate change (UNOCHA 2018). A slow-onset disaster such as drought can be addressed better through forecast and action to reduce the effects (UNOCHA 2012). The sequence of below-normal rainfall before and around 2011 saw the Horn of Africa experiencing a serious drought that left nearly 2 million people with food and water insecurity and thousands of children dropping out of school (UNOCHA, 2012). Despite the early warning outcry from various actors, the slow action by the governments led to the situation becoming catastrophic (UNOCHA, 2012).

The effect of slow-onset disasters leaves many people in shock and brings them into unprecedented poverty levels (World Bank, 2016). Oftentimes, poor people are exposed to these climate-related shocks where

economically are unable to feed well or access other social needs. To summarize the characteristics of rapid and slow-onset disasters, the table below provides few of the parameters.

Table 1. Characteristics of Rapid and Slow-onset Disasters

	Rapid on-set event	Slow-onset process
Type of Event/process	Single, unexpected events	Prolonged and incremental process
Timeframe	This happens immediately within days or hours	Slow onset takes long over the years. Example drought
	Instant, identifiable start and end point	The process is gradual with no set ending.
Predictability	Cannot be predicted its frequency or magnitude	Slow-onset processes can be predicted and managed.
Impacts	Can cause damages and losses in short time when it occurs.	Causes long-term effects such as soil degradation and other environmental factors.
Level of Impacts	Appears at local, national, and regional scale	Potentially spread out over larger geographical areas up to the global level

Source: Author, based on information from IOM 2020, UNFCCC 2012, UNHCR 2018, Staupe-Delgado 2019

Strengthening the community with relevant hazard mitigation measures and building vibrant emergency preparedness allows the community to reduce the effects of the disasters. When community structures are strong and operational, they become resilient to cope in any unexpected hazardous situation and bounce back quickly (Akeyo 2010). It is critical to acknowledge that community structures have to be supported with the relevant capacity to the individuals, and groups with the right skills and social networks as enabling space for a smooth transformation process.

Characteristics of Community Resilience

The subject of community resilience is widely discussed from different dimensions and extended to explicitly identify communities with the right capacities to support them in the event of a shock. Various studies have pointed out different but common measures to identify the characteristics of a resilient community. Paul Ryan (2010) developed a model demonstrating classified groups of items that shows high and low levels of resilience of the community which is shown in figure 2 below.



Figure 1. Characteristics of Community Resilience

Source: Paul Ryan (interfacenrm.com) (2010)

When various characteristics are assessed and functionality determined, this raises the community to vibrant or non-vibrant capacity to withstand adverse disruptive situations. Other integral aspects include the social interaction of individuals, institutions, and cultural values (Renschler et al., 2010). Renschler expounds on community resilience characteristics by looking at the dimension of vulnerability measured through social index tackling various socioeconomic factors.

This is evidenced by a study of Abruzzo earthquake in Italy on April 6th 2009 (Lippincott, 2016). The affected people were adamant to take government directives to move but instead carried the idea of setting up a community resilience eco-village as their own initiative (Lippincott, 2016). The government's decision of resolving a community problem without engaging them was unacceptable to the community (Lippincott, 2016). This demonstrates the importance of putting the community at the center stage in all humanitarian and development-related decisions. The community carries a wealth of knowledge and consulting with them will increase coherence in the effort to address their issues.

Theoretical Frameworks

Community Vulnerability Framework and Resilience Toolkit Concept

There are two dimensions of community vulnerability within the lenses of vulnerability and resilience (Rogers, 2013). Mostly social researchers have invested much in interrogating the relationship between vulnerability and resilience of a community in relation to factors on the environment and social disruptions which have the bearing of increasing the vulnerability of the affected.

The vulnerability framework is commonly used during the initial period when a disaster has happened and resilience activities fit within the recovery phases (Bergstrand et al., 2015). Rogers (2013) argues that vulnerability is an upward-driven approach to providing aid while the concept of resilience is a people-centered approach that acknowledges the participation of individual, organization, and community capability and capacity.

Cannon and Muller (2010) oppose this argument regarding the transition from a vulnerability to a resilience perspective because it does not fully consider human society's socio-economic mechanism of participation and community engagement at all levels. Another dimension on community vulnerability emanates from the country's national economic development. Lwin (2020) suggests that developing countries like in Asia have inhabitants who are prone to flooding and are exposed to vulnerability due to poverty levels.

Cambodia and Lao's countries are ranked in East Asia as lower-middle-income economies facing conflict and natural hazards due to social and cultural practices exposing the community to risks (Rao, 2013). The community resilience construct is its social capital which includes the infrastructure, assets, and human resources that operate interdependently. This interconnectedness supports the community to adapt to disaster shocks are able to bounce back (Muller, 2010).

A theory-based toolkit was developed to incorporate stakeholders and recognize the existing systems and processes that capture the community's needs (Lippincott, 2013). The tool kit support in collecting information to measure community resilience (Norris, 2011). The tool is adapted from social psychology and public health literature (Pfefferbaum, 2012). The tool is later modified by Terrorism and Disaster Center with four overlaying spheres of connection and caring, resources, transformative potential, and disaster management.

Lippincott (2013), asserts that the four spheres are interconnected and share items that are important such as

communication critical in fostering connection and caring, and skill building which elements are avenues for transformation for community resilience. All these attributes are critical in stimulating community participation, being self-aware and contributing to human development thus strengthening community resilience.

Understanding Vulnerability

Vulnerability refers to a set of prevailing and consequential conditions which adversely affect the ability of a person or community to prevent, mitigate, prepare for and respond to hazards and recover from the impact of disasters (Bhatti, 2003, O'Brien, et al., 2006). It is related not only to physical factors but also to a range of social, economic, cultural and political factors (Ariyabandu, 2003).

Chambers (2006) posits that vulnerability has an internal and an external component. According to Boehle (2001), people's vulnerability is a function of both external pressures and their internal capacity to mobilize their resources to deal with environmental stresses. Vulnerability is defined as the characteristics determined by physical, social, economic and environmental factors or processes which increase the susceptibility of an individual, a community, assets or systems to the impacts of hazards (UNISDR, 2017). Despite some divergence over the meaning of vulnerability, most experts agree that understanding vulnerability requires more than analysing the direct impacts of a hazard.

Vulnerability is not simply about poverty, but it is generally the poor who tend to suffer the worst from disasters (Twigg, 2004; Wisner et al., 2004; UNISDR, 2009b). Understanding vulnerability, therefore, is critical in contextualizing and managing disaster risks. The fact that disaster risk not only depends on the severity of hazard or the number of people or assets exposed but that it is also a reflection of the susceptibility of people and economic assets that suffer loss and damage (OXFAM, 2017).

Exploring Community-Managed Disaster Risks

Geillard, (2012) argues that there continue to be gaps between knowledge and actions in disaster risk reduction. Most national risk reduction policies still rely on command-and-control and top-down frameworks, which emphasize scientific knowledge and national government interventions at the detriment of local and indigenous knowledge systems (GNDR, 2011; IFRC, 2011). However, disaster practitioners have been advocating for increased involvement of those affected by disasters in policy-making processes and disaster risk reduction. Disaster and development practitioners have thus pushed for CBDRR, a practice that has gained considerable attention in the last two decades (Heijmans, 2009; Pelling, 2007).

Reconciling the role of different forms of knowledge and actions from a large array of stakeholders at several scales and towards different directions, from the top down and bottom up, is likely to yield considerable strides towards meeting the expectations of the Sendai Framework (2015-2030), (Mercer, 2012). It cannot be assumed that either science or local knowledge alone will provide answers to development challenges within communities (Briggs, 2005; Tibby et al., 2008). Technical know-how adapted to local wise practices could greatly enhance DRR strategies across all levels (Dekens, 2007a, 2007b). Managing disasters entail managing vulnerabilities that include five basic phases: prevention, preparedness, emergency response, recovery and mitigation (Bhatti, 2003). It is not possible to prevent disasters, but the extent of their damage can be reduced.

Community Resiliency Model

Various studies have developed community resilience frameworks to explain factors and the interlink between them (Kulig, Edge & Joyce, 2008 Pg.4)). The community Resiliency model presented below, captures several factors interdependently linked to contribute to community resilience. The model shows the

influence from outside as important as well as community action. The aspect of self-awareness is critical to determine the level of interaction that contributes to a sense of belonging in a community (Kulig, Edge & Joyce, 2008 Pg.4)

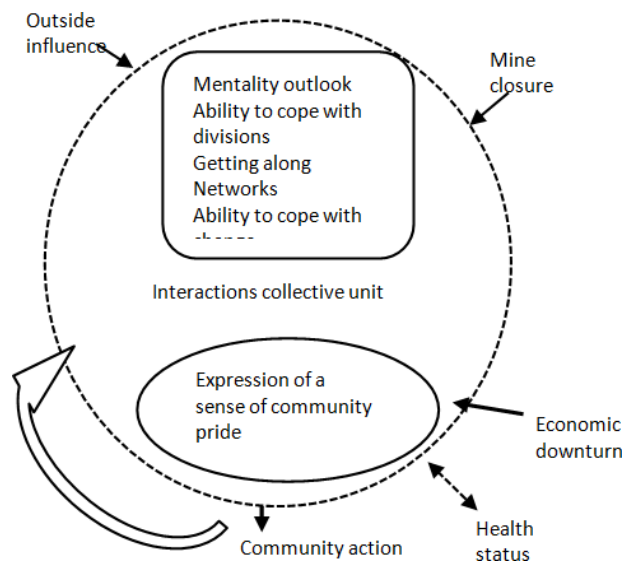


Figure 2. Community Resiliency Model

Updated community resiliency model. Reprinted with permission from Journal of Rural and Community Development, Vol 3, No. 3 77–94 (2009)

The community called Doma people live in Kanyemba region in northern Zimbabwe. This is a community that used to live in the mountains and are non-agricultural people in Zimbabwe (Joshua, 2016). According to the profile produced by the Joshua project, this community has little contact with other Zimbabweans and lives a life of fishing, trapping, and gathering honey and wild fruits and roots. The government of Zimbabwe has been intentional in generating programs in collaboration with partners to assimilate the Doma people into the rest of Zimbabwe society (Tinotenda, 2017)

In the context of this study, the model demonstrates the linkage of community cultural knowledge that is woven within the community social practices and sense of belonging. The efforts of community action and embracing the external network to enhance the Doma community way of living and with knowledge of identifying the hazards around them using indigenous knowledge and modern knowledge to improve their resilience to recurrent disasters. The aspect of leadership plays a critical role to the community especially timeliness in responding to the recurrent disasters.

RESEARCH METHODOLOGY

Evaluation Initiative

The qualitative study was conducted in Chapoto Village, Kanyemba Ward, in the northern part of the Mbire District, North West of Zimbabwe in Mashonaland Central Province of Zimbabwe. The area is in a low-lying area with an average altitude of 4000m above sea level. The area lies in the Lower Manyame sub-catchment, which forms part of the Lower Middle Zambezi Valley.

It is located at the confluence of the Zambezi and the Mwanzanutanda rivers. As a result of this location, the area has high risk of flooding and is classified as highly prone to flooding according to the UNDP 2015 hazard mapping. The area falls under Agro Ecological Region IV which is characterized by idiosyncratic climatic crises such as fairly and erratic low rainfall per annum (450 – 650mm), severe dry spells during the rainy season, and frequent seasonal droughts (FAO,2016).

Research Design

A research design is a concept useful for data collection and analysis (Bryman and Bell, 2015) (explanatory, descriptive or causal). This study utilized qualitative research methodologies that generated non-numerical data through the use of an interview guide to elicit in-depth fundamental reasons for the phenomenon explored in this study.

Data collection methods

This study employed a triangulated approach to the data collection process through the use of four techniques: Key Informant Interviews (KIIs), Focus Group Discussions (FGDs) and Observations. These approaches enabled the collection of primary data at different levels of the stakeholder paradigm and also allowed for the validation of the information obtained from the different groups of respondents in order to enhance accuracy and credibility. The following data collection tools were used.

Focus Group Discussion (FGD) Guide;

Key Informant Interview (KII) Guide;

Population and Sampling

The study reached key informants including, (chiefs, headmen, councillors, women, and youth groups), key government officers at the ward level, and some elderly people with a better historical memory of the area. Interviews with key stakeholders who including the District Administrator, and heads of government departments, were reached.

Focus Group Discussion

Focus Group Discussions (FGD) is a section of the qualitative research method that involves a process of in-depth information gathering (Natasha et.al. 2011). It is a process that purposively selects the group that has the knowledge of the subject of the study. Focused group discussions targeted groups that have worked with CBO Focus in disaster risk reduction in Kanyemba. These are groups involved in various disaster risk reduction activities such as water and sanitation, environment, food security and protection. Saunder et al (2016) suggest that by undertaking three to four FGDs interviews and no new information is coming, then the researcher has reached saturation level of gathering wide scope of ideas. Each FDG involved eight (12) people ((Leitao & Vergueiro, 2000) and it took about ½ to 2 hours. The venue of the meeting was agreed upon that was convenient to all the participants.

Validity

Trustworthiness

Qualitative research studies involve an inductive strategy integrating four key components of trustworthiness- credibility, dependability, confirmability and transferability (Hanson, et al., 2011). To ensure the credibility of the study, in the qualitative process of the interview, the researcher engaged an additional skilled moderator to facilitate the interview discussions with neutrality. An open discussion with the moderator to disclose any biases in the study will be done to give a full disclosure (Saunders et al.2016). This step is necessary to remove any possible biases and ensure the validity of the study. A respondent validation exercise was done to assess the initial results.

Confirmability

Consideration in this study was done in the entire process of interviewing, recording, and interpreting the data. Neutrality discipline by the moderator in the exercise was applied. Tobin & Begley, (2004) states that confirmability in research work is concerned with the process and how data is interpreted and avoiding any biases. The moderators involved in the study were asked to disclose any possible biases during the interview process.

The researcher piloted the interview guide questions in for the key informants and the focus groups. This was helpful in detecting any discrepancies which are corrected before embarking on the main study. An interview guide is an appropriate tool that ensures the research is consistent with the interview process (Krauss et al. 2009).

Data Collection Procedure

Qualitative data collection is an approach that helps the researcher to delve deeper from an individual perspective (Saunders et al.2016). Sunders (2016) states that the appropriateness of the researcher and physical appearance should be considered. The researcher prepared and conducted interviews targeting key informants guided by the interview guide. The date and the time were agreed upon and recorded indicating the interview was been done.

For the Focus Group Discussion, the moderator welcomed the participants and created a conducive environment for everyone to be comfortable. The purpose of the study and the reason for the meeting was shared. Informing the participants about how the information is used is important (Nancy, 2014). Guided by a set of broad questions to generate discussion among the participants, the facilitator drove the discussion while an assistant served as the note-taker. The audio smartphone was used to record the discussions and later transcribed the discussion.

Qualitative Data Analysis

Deductive analysis was conducted to map themes. Qualitative data collected through note-taking and recording was gathered and put together for printing. Saunders et al. (2016 Pg. 568) state that meanings in qualitative research depend on social interaction and therefore analysis and understanding data need to be classified into categories. The recording was transcribed as soon as possible to avoid any backlog in typing the notes that could probably compromise the data.

The process of data collection and review gave the researcher a good understanding on emerging patterns of the data. This was then coded based on the similarities of the meaning and later themed based on the objectives of the study. The themes which were identified in the study were tested and refined to ensure there is coherence in guiding the analytical framework.

Ethical Consideration

Ethics in research raises concerns on access to institutions and to individuals during the data collection process. Ethical consideration cements the accountability in confidentiality and protection to those participating in the study (Babbie, 2009). Research ethics is about projecting a standard that directs how the researcher conducts when interacting with the respondents (Saunders et al, 2016).

The study observed ethical principles of integrity by ensuring the work is truthful and working openly. The participants were asked to read and consent and for those who did not understand the English language, the local leader was able to read to them before engaging in any interview or focus group discussions. The

researcher was conscious about causing any form of harm during the study period that could trigger anxiety or stress due to violation of confidentiality

RESULTS AND DISCUSSIONS

The study analyzed the causes of vulnerability amongst the Doma community and evaluated the relevance and of CMDRR approaches adopted by CBO Focus in promoting disaster preparedness in Kanyemba ward. Contextualized in literature and within the Kanyemba ward are the concepts of vulnerability, CMDRR and community resilience. The study adopted a ‘case study’ research design. This chapter presents the findings of the study.

Demographics

Kanyemba Ward has a population of 4 150, constituted by 964 households in 24 villages inhabited by the Chikunda and the Doma tribes (CBO Focus, 2017). The age distribution of the population is summarized in Figure 2.

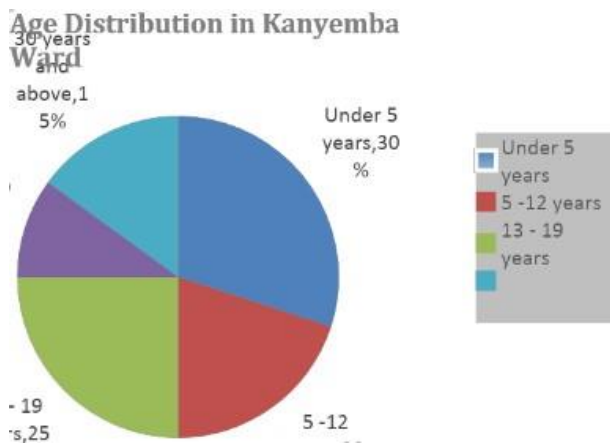


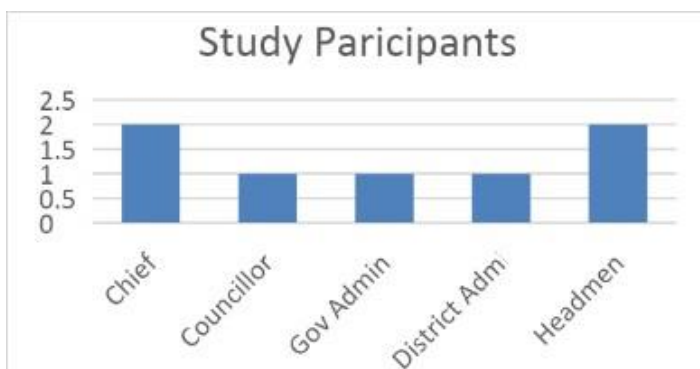
Figure 2: Age distribution- Kanyemba Ward- Source- Field Study

50% of the population is composed of children below 12 years. This is mainly attributed to the lack of family planning education in the community. The 13-29 years make up 35% of the study population, while 15% were adults above 30 years. Kanyemba ward is mainly made up of a relatively young population.

Demographics of Participants

The table below shows those who participated in the key informant interviews

Table 2: Study participants



Group	Number of Participants		
	Female	Male	Total
Community Representatives	6	6	12
Government Officers	7	6	13
Elderly people	7	8	15
Total	20	20	40

FGD Participants

Baseline data (hazard assessments and mapping, disaster awareness) was solicited through 3 focus group discussions with 40 participants (20 Females and 20 males). The 40 participants chosen from the community participated across the project components and also cascaded information to the whole village. Data collected provided insights into community exposure and disaster preparedness levels and was used in developing a CMDRR plan. Village heads and the Ward Councillor led activities and discussions. To facilitate CMDRR plan, training, theatre arts, sports and functional adult literacy approaches were used.

Question 1: How relevant was the project implemented by CBO Focus in the Kanyemba ward contributed to disaster risk awareness

Operationalizing CMDRR

The project followed CBO Focus Standard Operating Practice (SOP) on how to engage and facilitate effective community involvement through the CMDRR process (Figure 1). The SOP helps to strengthen community structures by implementing risk reduction actions. The approach has been widely applied by development partners as a sustainable community empowerment approach that facilitates all-inclusive participation of varied segments of the community such as women, the elderly and youth during community action planning. Using a wide range of participatory rural appraisal tools, communities are empowered to analyze, profile priority hazards and suggest mitigation interventions.



Figure 1: Participatory monitoring & learning Process. Source: IIRR

Conceptualizing Community Resilience

Vulnerable communities, like the Doma in the Mbire district of Zimbabwe, should have the capacity to withstand the impact of recurrent flood and drought disasters. Patel et al, (2017), posit that community resilience is the ability of a community to anticipate, absorb, accommodate, and recover from the effects of a hazardous event in a timely and efficient manner.

CBO Focus through its Emergency Response Project, facilitated the reconstruction, and re-organization of community structures in enabling the flood-prone Doma community to anticipate, absorb, accommodate and recover from flood and drought disasters. Project components included awareness and training, capacity building, and the development of various forms of household and community assets. CBO Focus envisaged, through the CMDRR project, a vibrant, disaster-prepared Doma community with high levels of resilience to climate hazards.

In support of the foregoing argument, Montelongo and Wittek, (2016) postulate that community resilience is the ability to prepare for anticipated hazards, adapt to changing conditions, and withstand and recover rapidly from disruption. They further argue that resilience activities include protection, prevention, mitigation, response and recovery and that these activities are necessary steps in building community resilience to disasters. UNISDR (2009) defines resilience as ‘the ability of a system, community or society exposed to hazards to resist, absorb, accommodate and to recover from the effects of a hazard in a timely and efficient manner, including through the preservation and restoration of its essential basic structures and functions’. Community resilience, therefore, is a function of disaster risk reduction interventions and emphasis on disaster preparedness for communities, including the flood-prone Doma community in Mbire District.

Common among the three definitions is that community resilience to disasters is a factor of collective function. It was, therefore, prudent for CBO Focus to strengthen not only the household but institutional capacities at the local level to promote community resilience. Various variables should exist before a community can be ascertained to be resilient. The variables include the whole concept of disaster preparedness (prevention, protection, adaptation, mitigation, emergency response and recovery). Alluded in these activities is the need for hazard assessments, education, training, and awareness, the presence of disaster preparedness plans, and effective institutions at all levels. It is recognized that successful mitigation plans need to consider the differential impact of hazards as a product of social vulnerability (Morrow 2008).

Sources of Livelihoods

The poverty prevalence rate in Kanyemba is 85.3%, attributed to limited livelihood options (Govt, 2017). The Doma tribe were previously nomadic hunter-gatherers who were forced to abandon their nomadic life by the colonial government (Marindo-Ranganai, 1995; Isaacman, 2000). The community is now practicing subsistence (rain-fed) agriculture albeit with limited agronomic knowledge and skills. The average land holding size is 2 hectares per household. The main crops grown include maize, sorghum and millet, leafy vegetables, and cotton. Due to erratic rainfall, the ward is considered unsuitable for dry-land cropping, and as a result, food-plain crop cultivation is practiced along Mwanzanutanda River (Bola et al, 2013).

Annually, more than 40% of crops grown near the game reserves are damaged by wild animals whilst the domestic animals are regularly killed by lions and hyenas. As a result, more than 84% of the population is chronically food insecure and dependent on food handouts from the government, humanitarian and development partners (WFP, 2016). The village Headman said “we feel that the nature is against us, we hardly get enough food for our families”

Literacy Levels in the Doma Community

Level of literacy in this community is high (96%) of community members have never been to school due to their predominantly nomadic hunter-gathering lifestyles and lack of schools (CBO Focus, 2016).

There were no schools in the area until 2016 when the Seventh Day Adventist Church constructed a primary school in response to a lack of educational facilities. The primary school now offers classes from the Early

Child Development (ECD) up to Grade 3 only.

A study by the CCDZ (2016) indicated that pupils from the Doma community were traveling over 16km to the nearest school in Chapoto Village. They had to navigate the thick Nyasogo forests, which are infested with dangerous wildlife, and cross the wide Mwazamutanda River in order to access the nearest school at Chapoto. Parents argue it is not safe for children to travel long distances to school as they risk being attacked by wild animals; hence most children do not go to school. Girls end up getting married before their 15th birthday (Multiple Indicator Cluster Survey, 2014). In one of the group discussions, three participants lamented that their children have been attacked by wild animals while walking through the thicket to school and that there is no need of educating them if their safety is not guaranteed.

Education enhances knowledge on disaster risks and influences response strategies. Formal schooling promotes preparedness behaviors because education influences cognitive elements and shapes how individuals perceive and assess risks as well as process risk-minimizing information (Menard et al. 2011). If people perceive their risks to disasters as real, they are more likely to react positively. At programme inception, the community pointed out that they were relying on indigenous knowledge systems to predict and respond to hazards. The Chief said “ it seems our indigenous knowledge system is failing us in predicting recurrent floods and human-wildlife conflict, we are confused with what is happening to the nature.

Question 2: How is the social connectedness of the community in the Kanyemba ward improves community disaster risk reduction activities?

Participatory Disaster Risk Assessment (PDRA)

The project facilitated PDRA which involved gathering all relevant data about the Doma community. Data included physical characteristics (location, area, natural resources, and climate), demographic features, economic and socio-political aspects, and environmental challenges as well as determining the nature and extent of risk by analyzing the characteristics of hazards, the degree of vulnerability and community capacity.

The PDRA process was guided by the risk reduction formula:

Disaster Risk= Hazard x Vulnerability

Capacity

Source: Omar et al.,2012 Risk Exposure and vulnerability

Conceptualizing Community Resilience

The equation illustrates that Disaster Risk Assessment focuses on hazards, vulnerabilities and capacities. The PDRA processes, as conducted in Kanyemba ward, are discussed below.

Community Hazard Assessment

The community hazard assessment is described as the process of defining the threats and understanding the nature and behaviour of hazards (CBO Focus CMDRR SOP, 2016). The assessment brings out information on the types and characteristics of common hazards, their cause, intensity, effects, impacts, warning signs, the speed of onset, frequency, and period of occurrence and duration.

Firstly, CBO Focus conducted a sensitization meeting with local leadership. The essence of the meeting was

to disseminate information on the CMDRR project. This was crucial to ensure buy-in from the local leadership who eventually cascaded the same information to the community. Thereafter, focus group discussions (FGDs) were conducted.

Issues covered during the FGDs included likely hazards, development of a seasonal calendar, transect walks and community hazard mapping, capacity assessment and drafting of disaster risk reduction action plans. The processes were conducted in a space of two weeks. Findings from these processes are discussed below.

Hazard Profiling

Through FGDs and thematic groupings, wild animals such as warthogs, elephants, buffaloes, hippopotamus, baboons and monkeys (human-wildlife conflict), drought, floods, pests such as fall armyworm; and diseases like malaria and diarrhea were identified as common in Kanyemba ward. Hazards were ranked using a pair-wise ranking based on the criteria set by the community, mainly considering the most pressing or prevalent hazards. Hazards were then prioritized in their order of likelihood, and consequences of the impact on the local communities. A risk assessment matrix (Table 2) adapted from the Salvation Army’s Safe to Serve Manual (2012) was used.

Table 4: Hazard Assessment – Kanyemba Ward

Consequences of the impact						
		Insignificant	Minor	Moderate	Major (serious harm and injuries)	Catastrophic (Death)
Likelihood		1	2	3	4	5
Rare (will happen in exceptional cases)	1	2	3	4	5	6
Unlikely (Could happen but rarely)	2	3	4	5	6	7
Possible (chances are that it could happen)	3	4	5	6	7	8
Likely (Will probably happen at some time)	4	5	6	7	8	9
Almost Certain (will happen in most circumstances)	5	6	7	8	9	10

Scale: 2-4 – Low-Risk Hazard 5-7 Medium risk Hazard 8-10 -High-risk hazard

Source: Salvation Army Manual (2012).

Kanyemba-Hazard Profiling/Prioritization

Priority hazards in the order of importance were droughts, floods and human-wildlife conflict. Mid-season dry spells have now become a permanent feature. Bola et al (2013) reported similar findings when they noted that the dry spells in Kanyemba have increased in frequency and magnitude.

The worst drought in history included the 1982/3; 1991/2; 1997/98, 2002/3; 2009/10; and 2015/6 seasons. According to the Doma community, droughts occur almost every five years. Droughts are attributed to the El Nino phenomenon, as highlighted by an analysis of the past 60 years, which shows that the majority of El

Niño years (62%) resulted in below-normal rainfall in Zimbabwe (UNDP, 2017).

Floods are very likely and usually triggered by heavy rains that result in the backflow of the Zambezi River from Lake Cahora Basa. Heavy rains and resultant floods are linked to the La Nina phenomenon. Meteorological data analysis of the past 60 years in Zimbabwe indicates that 67% of La Niña events have resulted in above-normal rains (UNDP, 2017).

Human-wildlife conflict (HWC) was scored high in terms of frequency and catastrophic in terms of the consequences. HWC exists when the needs and behaviour of wildlife impact negatively on the goals of human beings (Cumming et al., 2007). The direct costs to local communities encompass threat to human life and economic losses due to loss of livestock and crops.

The main cause of human-wildlife conflict in Kanyemba is the proximity of the area to the Dande North Safari, Chewore National Park and Doma Safari. FGDs indicated that there is greater traffic of pedestrians using bush paths located along these animal corridors thus increasing the risk of contact with wild animals. Five people and more than a hundred livestock were killed by 14 lions within a space of two weeks in (News Day, 2010). Activities including fetching water, collecting of wild fruit, berries and fuelwood, fishing, and poaching further expose the inhabitants to wildlife.

Pests and disease outbreaks were scored moderately in terms of occurrence, intensity, and overall risk to communities. FGDs highlighted the outbreak of zoonotic disease due to the interaction of livestock and wild animals, especially buffalos, resulting in outbreaks of foot and mouth disease. Communities also identified the fall armyworm and quelea birds as major crop pests.

The project prioritized three main hazards, i.e. drought, floods, and human-wildlife conflict. Further assessments were done on these hazards for communities to develop risk mitigation plans. The assessment focused on their characteristics, warning signs and signals, forewarning, speed of onset, frequency, period of occurrence, and duration.

Seasonal Livelihoods and hazard calendar for Kanyemba Ward

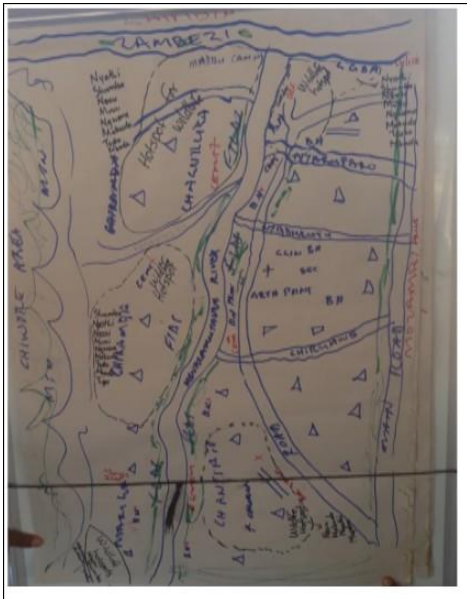
The community spelled out and crafted their seasonal calendar to understand different activities and likely hazards that affect their area. They understood the definition of a hazard to be 'any potential risk or factor that has the potential to pose significant damages to the lives of people, animals, crops and assets. The Doma community has various livelihood activities going on at different times of the year. Different hazards occur at different times due to climate change and variability. The discussion

revealed that heavy rains were experienced revealed that heavy rains were experienced between January and March. Protracted dry spells are experienced in December to February, at the peak of the cropping season, resulting in heavy crop losses due to moisture stress. Some households travel to Gurube district (350km) to provide casual labour in tobacco and maize farms in exchange for cereals or cash. This is mainly done during the planting and harvesting period, thereby affecting the households' farming activities. Human-wildlife conflicts happen throughout the year, but most prevalent during the cropping season (January - march)

Hazard Mapping

Study participants identified someone with good drawing and handwriting skills to draw a community map. Participants marked the boundary areas indicating major landmarks (rivers, mountains, roads, markets, pasture/farmlands, forests) and critical facilities (clinics, schools, bridges, settlement patterns). Participants identified and marked the hotspots where most hazards occurred. CBO Focus later converted the community

map into an ArcGIS map (Figure 4). The Arc GIS generated map shows a clearer view, the various human-wildlife conflict areas, floodplains, and key community assets. Flood-prone areas were identified as those situated along the Mwanzanutanda riverbanks. Areas such as Rivers, lodges and the Police Station were identified as wildlife corridors and therefore prone to animal attacks.



KANYEMBA MAP

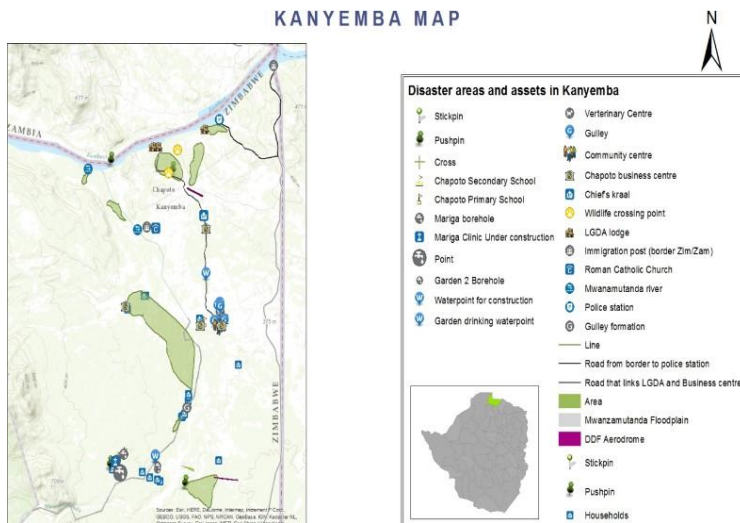


Figure 4: Hazard Map of Kanyemba (top) and above is the ArcGIS Source: Field Study

CMDRR capacity Assessment and Action plan

Participants identified the strengths and assets present in individuals, households and at community level. Communities employ the capacities to cope, withstand, prevent, prepare for, mitigate or recover from disasters. Individuals, households or communities, have latent capacities that can be tapped to increase resilience to identified hazards. The facilitators made use of PRA tools such as the social/resource map, Venn diagram and experiential stories to identify capacities to reduce vulnerability by focusing on prevention and mitigation capacities for individual survival and community preparedness.

Individual capacities included skills, knowledge, attitude and resources, whilst community capacities included natural resources, social organizations, networks, and leadership. Information gathered through participatory risk analysis was used to develop community action plans to address the underlying causes of

vulnerability and build peoples' resilience to prevalent hazards.

The community representatives selected the strategies for addressing identified risks. Strategies were premised on the best possible way the community would utilize the limited community resources (money, materials, time and labour) to realize the recommended DRR outcomes. Based on the strategies, CBO Focus supported the community in drawing up a plan which reflected the improvement they wanted to see when they deal with risks posed by hazards. Considered was the practicability, external support and feasibility of addressing those vulnerabilities to realize a realistic plan including resources. Strategies emanating from the disaster risk management plans developed follow below.

Drought Mitigation Strategies

The use of CAMPFIRE funds and food handouts from the Department of Social Welfare and humanitarian agencies are common strategies. Households rely on fishing, honey production, harvesting wild fruits and; pottery, and casual labor in Guruve, Mozambique and Zambia. However, while casual labour may be considered an income diversification option, Naess et al., (2010) argue that income is insufficient to cover a household's expenses given that casual labour is a low-income activity.

To mitigate droughts, the Doma prioritized the adoption of climate-sensitive agriculture including the growing of drought-tolerant crops (sorghum & millet); improved grain storage; and water conservation techniques. The strategy also included livelihood diversification to enhance food and nutrition security during droughts.

Flood Mitigation Strategies

Communities indicated they usually respond to floods by climbing trees or using locally made canoes to avoid drowning. However, the strategy only applies to adults as children have limited ability and endurance to hold on to the trees until they are rescued. Communities highlighted that the damage to property, crops and livestock is inevitable because of the rapid progression of the hazard to enable the communities to take precautionary measurements.

The action plan for flood mitigation focused on minimising the damage to crops and livestock during flooding. During the FDGs, communities acknowledged that re-settling to higher grounds would minimise people's risks to the devastating impacts of floods. The proposed strategy was for the leaders to allocate land to households living along the low-lying flood plains. However, attempts to move the people were met with resistance because people believed that the soils are fertile along the flood plains and they were likely to lose their fields. Livelihood diversification strategies proposed for drought mitigation were also considered to be applicable in mitigating impacts of floods.

The community established a rescue team which was trained to provide life-saving measures for all the flood victims. The rescue team sourced for communal equipment such as boats, whistles and ropes to initiate lifesaving and evacuation measures during floods and started fundraising towards the purchase of this equipment. Part of the flood preparedness plans included community sensitization meetings on flood and early warning messages. The DCPC will facilitate such meetings to ensure the flood-strategy is appreciated by all learners. The newly established information hub by the UNDP funded Zimbabwe Resilience Building Fund Project that will broadcast early warning messages to the communities is central to DCPC success.

The lack of interaction between the Doma community and other people from neighbouring villages was a major gap identified. With strong social connectedness, social safety nets are widened and survival chances during disaster events are improved. The recommendation was that the Doma people should interact more

with other villagers. Increased participation in community gatherings and events would facilitate such interactions. Soccer and drama tournaments with other communities were considered the easiest way to promote social connectedness. CBO Focus supported the Doma community to set up soccer and netball clubs and provided kits for their teams.

Human-Wildlife Conflict Mitigation

Communities have indigenous knowledge practices to repel game. Noise making, fireworks and pepper sprays are some of them. Communities build temporary dwellings in the fields to guard crops against wild animals. Baboons are cited as problem species, showing very little fear for women or children and threatening them to the point where those guarding fields flee. At the community level, HWC is managed through National Parks and Wildlife Officers and controlled hunting in conservancies within the context of the Communal Areas Management Programme for Indigenous Resources (CAMPFIRE). According to Matema and Andersson (2017), CAMPFIRE was set up as a combined development and community-based natural resource management program and uses the controlled exploitation of wildlife in areas bordering national parks to finance local development.

Communities agreed to continue using proven traditional methods of controlling wild animals, for example, growing crops such as chilies and garlic along the field boundaries to repel wildlife. Promotion of chili pepper growing in wildlife hotspot areas, may give high returns to the community and reduce losses as was proven in some areas (FAO, 2007). Communities are encouraged to build security fences around their fields and homesteads. This includes building strong and improved livestock housing and proper dwelling places.

The community called for (i) livelihood diversification to minimize dependency on hunting and gathering as this practice was exposing the communities to wildlife attacks, (ii) enforcement of community by-laws that restrict poaching and entering of protected game parks and (iii) lobbying development partners and local government to drill boreholes and construct water dams to reduce competition for water with wildlife. Communities were sensitized to consider taking insurance cover against defined risks, such as crop and livestock damage by wild animals.

Implementation of CMDRR Action Plan

CBO Focus supported the community to establish a Ward Resilience Committee (WRC) to deal with shocks and stressors using the CMDRR approach. The WRC has 18 members (7females, 11males), comprising the Ward Councillor who serves as the Chairperson, representatives from the Ministry of Youth, Women Affairs, District Development Fund (DDF), Agricultural Research and Technical Services Extension, National Parks and Wildlife, local school head, Neighbourhood Watch Police and community representatives. The WRC came up with 5 functions namely:

Initiate community's hazard prevention and impact mitigation,

Disseminate hazard early warning messages ,

Initiate search and rescue missions,

Facilitate humanitarian assistance,

Conduct assessments of property and other damages.

The WRC is linked to the District Civil Protection Committee (DCPC) which coordinates civil protection issues at district level (Civil Protection Act, 1989). DCPC trained the WRC on their roles and

responsibilities including communication channels for effective response. The project further equipped the WRC with first aid and emergency kits consisting of bandages, pain stop tablets, antiseptic ointments, scissors, ropes, whistles and other lifesaving items used in emergencies.

Question 3: How relevant is communication in Kanyemba ward enhancing disaster risk reduction knowledge?

Community-wide dissemination of the CMDRR Plans

CBO Focus facilitated a Resilience Fair under the theme “Reducing the number of affected people through building resilient communities”. This was an initiative to bring together communities from across Kanyemba ward to learn, reflect and disseminate their CMDRR plans of minimizing adverse impacts of droughts, floods and human-wildlife conflicts.

The fair was also intended to enhance the social connectedness of the communities. The Doma community interacted with other communities, thus they opened up and created social networks that are likely to be critical in widening social safety nets during disaster situations.

Sporting events that included soccer and netball matches were played during the resilience fair to entertain crowds (edutainment). Existing soccer teams were used to avoid parallel structures within the community. Teams comprised of people in various age groups (18-35 years) from Mbire district. The wide range of age groups pulled crowds of similar ages as well as other younger and older people as soccer is a popular sport in Kanyemba community. 1,300 people from across Kanyemba participated including District Administrator (DA), Council Chairman, and CEO of Mbire Rural District Council.

The WRC conducted some simulation exercises to equip the community with skills for responding to emergencies such as floods, fire, diarrheal disease outbreak and wildlife attacks. Poetry, songs, dance and theatre arts were used to convey key CMDRR and resilience building messages. This was well received and accepted given the low literacy levels of community members. The community was able to identify with key messages and appreciated the initiative in building their resilience to priority disasters. The community agreed to connect and communicate to learn from each other through these activities.

Functional Adult Literacy Training

During the capacity assessment exercise, it was noted that low literacy levels in the Doma community negatively affected their ability to process messages, take action, and plan for recovery in the event of disasters. The project adopted a Functional Adult Literacy (FAL) approach to enhance the community’s understanding of the CMDRR approach. About 98 (46 males, 52 females) out of 120 targeted community members were trained.

Participants were chosen by local leaders using guidelines from CBO Focus. For eligibility, one had to be above 18 years, have never been to school, willing to participate and to share lessons learned with the peers. Since the community is divided into 5 Village Development Committees (VIDCo), each VIDCo was tasked to provide 24 people to participate in the CMDRR training. Other participants pulled out of the training due to social commitments whilst others failed to cross the river after a rainstorm.

The theme for the 5-day training was ‘Training for Resilience’. An external consultant facilitated the training. Topics covered included Digging out the Root Causes of Disasters, Training for Transformation, Social Structural Methodology, Stakeholder Analysis and Introduction to Basic Literacy and Numeracy. The training approach incorporated the use of pictures, symbols and theatre to boost assimilation of concepts. Deep emotions were expressed as participants associated the photographs with their situation. It was easy to name the themes under the discussion, such as floods, human-wildlife conflict and diseases. Use

of theatre and simulation exercises helped simplify the CMDRR approach and key messages. Participants could visualize what they can do to respond to various disasters. This has a lasting impression rather than being told.

Effective Networking and Collaboration

CBO Focus participated in the monthly Rural District Council meetings organized by Mbire Rural District Council. The platform brought together different line ministries and NGOs operating in the district to share promising practices, progress updates and challenges faced in the implementation of various projects. CBO Focus utilized this platform to share the CMDRR project and identified areas for collaboration with other stakeholders. The project achievements were broadcast on national television. This fostered good working relationships and minimized duplication of assistance given to communities.

LESSONS AND RECOMMENDATIONS FOR FUTURE INTERVENTIONS

Continuous feedback with the community in the process of drafting the action plan increased community ownership of the processes. It is critical that vulnerability reduction interventions generated by the communities are incorporated in long term plans and actions of sustainable development with the local planning process at all levels.

Resilience building is a long-term endeavour requiring long-term projects. Development actors can utilize lessons learnt from the CMDRR project to design innovative long term resilience building projects. This will assist stakeholders to monitor the effectiveness and relevance of CMDRR approaches in building community resilience to climate shocks in Kanyemba.

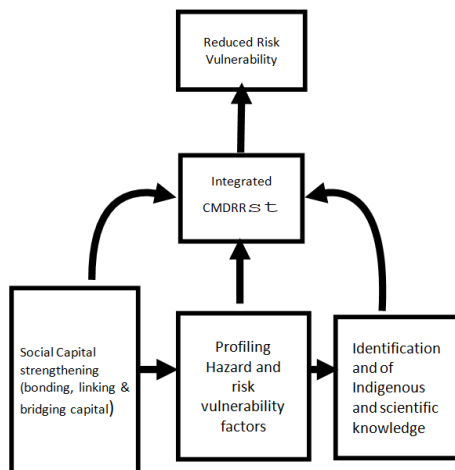
Considering the high illiteracy levels in the area, there is need for future interventions to concentrate on Non-Formal Education (NFE). Literacy and numerical skills as well as general skills, for example, abstract thinking obtained through formal education imply a better understanding and ability to process risk information such as weather forecasts or warning messages (Mileti and Sorensen 1990, Spandorfer et al. 1995). The less privileged children will be able to also complete primary school education and improve their chances of participating in economic development. CBO Focus believes that this will promote a sense of self-fulfillment amongst the marginalized Doma people and equip them with skills to engage in other long-term developmental activities which will reduce negative coping strategies.

Framework Outcome of Doma Community Engagement

The project outcome reinforced the fact that joint engagement with the community in the whole process reduces vulnerability. The framework outcome (Figure 5) depicts key areas where participatory techniques in the context of disaster risk reduction utilize capacity and vulnerability analysis that captures the weaknesses and strengths of the community and build upon the plans to support the community in developing a DRR plan.

Further, the outcome demonstrates that indigenous knowledge is critical when addressing disaster risk reduction action. This raises a gap in the community resiliency model that demonstrates collective interaction levels but fails to capture the indigenous practices that are key in addressing hazards, vulnerability and steps to reduce the risks. The model below emerged with a clear understanding that social capital model is critical in the process of profiling hazards and acknowledging the indigenous and scientific knowledge for better and effectiveness in addressing community-managed disaster risk reduction.

Figure 5: *Doma Community Engagement Outcome*



CONCLUSION

The project was aimed at building community resilience through participatory risk mapping and analysis as well as capacity building of Kanyemba ward resilience committees. The thrust was to recognize, capitalize and enhance what communities do in terms of addressing their perceived risks. Such an approach, the project envisaged would promote ownership, sustainability, and ongoing collaborative processes amongst different communities and stakeholders. Active community participation in all project processes was, therefore, key to unlocking the potential present and salient within the target community.

Results from the capacity assessment indicated that Kanyemba ward has a wide array of social and physical assets that the local community, with increased knowledge and understanding, local government and non-state players can leverage in innovative and creative ways to promote enhanced community resilience. Some of the high-risk zones, like the animal corridors, are only known by the Doma community and have never been exposed to local authority officials, hence the use of the ArcGIS to map high-risk areas, beneficiary households and key assets critical for resilience construction. The resultant maps would assist leadership and key stakeholders to better plan and manage shocks and stressors.

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