



# An Analysis of the Physical and Socio-economic vulnerability in post-disaster resettlement: Case Study of Bunambutye camp, Eastern Uganda

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## Abstract

To control the problems that have resulted from landslides affecting Mt. Elgon slopes in Eastern Uganda, the Government has created planned resettlement schemes to resettle over 100,000 people from the landslide-prone areas. Whereas resettlement is viewed as an important tool in alleviating problems associated with disasters, studies have indicated that planned resettlement schemes expose people to risks of impoverishment. This study analysed physical and socio-economic vulnerability in post-disaster resettlement, a case of Bunambutye resettlement Camp in Eastern Uganda. The study adopted a participatory research approach in which participants had control over the research process and agenda. Participatory household surveys were conducted with 140 respondents. This was complemented with key informant interviews, focus group discussions and field walk observations to elicit the necessary data. Utilizing SPSS version 20, univariate graphical and non-graphical exploratory data analysis based on measures of central tendency and dispersion together with content analysis suggest that households are faced with physical and socio-economic vulnerability. In response, households engage in unsustainable practices like seasonal movements from the camp as a coping strategy to mitigate the risks. To address these, we recommend resettlement projects pay attention to the needs of different social groups during the resettlement process and provide incentives that broaden the livelihood opportunities of resettled households.

## Introduction

Uganda has had a long history of displacements resulting from natural disasters, especially localised landslides. At the close of 2022, the country had a total population of 34,000 internal displacements due to natural disasters (IDMC, 2023). In response to the localised landslides on Mount Elgon, Eastern Uganda, the Government of Uganda created Bunambutye resettlement camp in 2019 to resettle over 100,000 people from the landside-prone areas (Rukundo et al., 2019). The process of resettlement aims at mitigating risks, ensuring safety and improve the quality of life for those affected. While resettlement is regarded as a crucial tool for alleviating disaster-related issues, studies have shown that planned resettlement schemes often fail to meet their intended aims. Rather than enhancing the livelihoods of the resettled individuals, they reportedly increase the risk of impoverishment.

Manatunge, et al. (2017), Bang et al, (2012), Aboda et al., (2021), and Khanakwa (2022) documented several socio-economic and physical problems faced by resettlement communities. These issues serve



as stressors that expose the community to harm, characterised by both physical and socio-economic vulnerability.

### **The nexus between human displacement, resettlement and vulnerability**

Vulnerability has been defined by different scholars concerning specific contexts (Orhon et al., 2020). In the context of displacement, vulnerability refers to the increased susceptibility of individuals or communities to harm, loss or hardship due to the process of being involuntarily relocated from their indigenous homes (Glazebrook, 2023). In the context of resettlement, vulnerability refers to the increased risks and challenges faced by individuals or communities who have been relocated to new areas (Ferris et al, 2020). Resettlement involves moving people to new places in a planned and controlled way, thus presenting a unique set of vulnerabilities. A combination of interconnected factors ranging from loss of livelihoods, inadequate access to services and social disruptions intensifies the vulnerability of displaced and resettled persons (Cernea, 2000). This study's vulnerability context centred on survivors' defencelessness in the face of risks and shocks experienced in their newly resettled areas (Forbes-Mewett et al, 2019). Conceptually, risks are defined as the exposure of survivors to uncertain consequences, framed in terms of impact and likelihood, while shocks represent external short-term deviations that significantly affect survivors' current state of well-being and livelihoods, such as slow-onset shocks like droughts.

Although the concept of displacement differs from resettlement, there exists a link between the two concepts because resettlements are a result of displacements, However, in concept, displacement refers to the general phenomenon of forced movement of people from their original homelands or country of origin to other areas due to reasons associated with disasters, conflicts, development or any other (Warner et al., 2010). Resettlement refers to the movement of people from their cradle lands to different areas in a planned and controlled way (Ogwang et al., 2018). Whereas displacement can be spontaneous or planned, resettlement follows clear set processes and guidelines (Manawadu et al, 2022).

In this study, resettlement is defined as the experience of internally forced displacement, wherein individuals are compelled to relocate to a different area due to their inability to remain in their previous residences. The study specifically analyses planned resettlements resulting from environmental disasters, such as landslides, a localised hazard in Uganda.

Recent studies (Aboda et al., 2022; Manatunge, 2017; Meru, 2021; Nseka et al., 2021) have concentrated on socio-economic vulnerability to resettlement within the context of development projects, the factors influencing the long-term satisfaction of post-disaster resettlers, resistance to resettlement, and the underlying reasons for the return of the Bududa 2010 mudslide survivors who were resettled in Kiryandongo back to Bududa district. However, these studies have not addressed how physical and socio-economic vulnerability manifests in post-disaster resettlement.

This study analysed the physical and socio-economic vulnerability in post-disaster resettlement in Bunambutye Camp in Eastern Uganda. The following research questions were thus interrogated in this study.

- i. In what ways does physical and socio-economic vulnerability manifest in Bunambutye Resettlement Camp?
- ii. How have physical and socio-economic vulnerabilities impacted the livelihoods of resettled households?



- iii. How does vulnerability differ among the various social groups within the Bunambutye resettlement camp?

### ***Conceptual and Theoretical Frameworks***

This study is grounded in the notion that vulnerability represents the defencelessness of individuals when confronted with risks and shocks stemming from the physical relocation of persons. For conceptualisation, the research embraced the concepts inherent in the DFID, (1999) Sustainable Livelihood Approach to ascertain indicators and variables associated with survivors' physical and socio-economic vulnerability in post-disaster resettlement. This asset-based framework outlines key factors affecting people's livelihoods and highlights their interrelationships, affirming its relevance to this study. The socio-demographic profiles of survivors, including income, expenditure, employment, social networks, food, and shelter, provided insight into the livelihood characteristics of those in resettlement. To identify variables pertinent to socio-economic and physical vulnerability, the study investigated human, social, physical, and financial capitals accessible to households, that can be utilised to foster the identified livelihood characteristics. Human capital variables encompass skills, sources of knowledge, and labour capacity. Social capital variables include networks, connections, and membership in formal organisations. Natural capital variables encompass land and water resources. Physical capital variables cover public buildings, housing, sufficient water provision, and sanitation, while financial capital variables comprise income generated and livestock ownership. By focusing on the assets and capabilities available to survivors and how they leverage these for resilience, the study conducted a thorough analysis of capitals such as skill possession and utilisation, land ownership and size, water resources, and income earned, this enabled insights into how physical and socio-economic vulnerability manifests and their impacts on the livelihoods of resettled households.

### ***Study Area and Rationale***

The study was conducted at the Bunambutye resettlement camp in Bulambuli District, Eastern Uganda: Latitude 1° 21' 59.99" N, Longitude 34° 08' 60.00" E. The Government of Uganda established the Bunambutye resettlement camp through the Office of the Prime Minister to resettle over 100,000 individuals from landslide-prone areas of the Mt. Elgon region. This government-planned resettlement camp aims to provide shelter and other livelihood opportunities for survivors from landslide-prone regions on the slopes of Mt. Elgon. This study offers empirical evidence on how physical and socio-economic vulnerability manifests post-resettlement, thereby enhancing knowledge and providing essential evidence-based information necessary for stakeholders to assess the effectiveness of policies and resettlement programmes, ensuring that they achieve their intended outcomes.

### **Method**

#### ***Research Design***

We employed a Participatory Research Approach (PRA), allowing participants to control the research process and agenda. Throughout the inquiry process, they articulated their views and expressed their understanding of their situations and problems. This strategy fostered positive relationships and trust with the study participants, thereby gathering valid content and documentation of local realities to enhance understanding and inform policy. The research design for the study was a descriptive and interpretive case study analysed using qualitative and quantitative methodologies. This method was guided by the philosophical framework of interpretivism, particularly hermeneutics, the philosophy of interpretation and understanding, as well as phenomenology, which seeks to comprehend the world through direct experience of phenomena. We adopted the ontological belief that reality is



socially constructed, multiple, tangible, and can be discovered through daily routines and conversations while interacting with others. In terms of the epistemological nature of knowledge, the study assumes that events are understood through the mental processes of interpretation, with the researcher and the research subjects engaging in an interactive process of talking, listening, reading, and writing; thus, the study embraced a more personal and interactive mode of data collection and analysis. We employed the interpretive design to gain a profound understanding of information and perceptions from research methods such as interviews, observations, and focus group discussions. Conversely, the descriptive research design enabled the study to gain deeper insights into the socio-economic and demographic characteristics of individual participants or the population, including their opinions on how physical and socio-economic vulnerability manifests in resettlement.

### **Data collection**

The target population focuses on the survivors resettled in Bunambutye camp due to environmentally induced displacements experienced on the slopes of Mount Elgon. This resettlement is government-planned; hence, the survivors were relocated in phases. The first group, which was resettled in 2019, formed the Phase I resettlement village, comprising 97 households. The second group, in Phase II, established the Phase II resettlement village, which included 136 households. In total, 233 households were resettled in the camp (OPM, 2020).

To obtain a sample population that accurately reflects the entire population, we employed stratified sampling by dividing the large population into subsets or strata based on shared characteristics, thus providing each member of the population with an equal opportunity to participate in the study. The participants were organised into groups for Phase I and Phase II resettlement; subsequently, a stratified random sampling technique was used to select members from each group. This ensured proportionate sample sizes and minimised any overlap or over-representation of respondents from a single resettlement. Maximum variation purposive sampling was utilised to identify key informants, including technical personnel and selected local leaders. This approach enabled the study to gather realistic information from a competent and knowledgeable target group.

Stratified sampling resulted in the establishment of Phase I and Phase II strata. Proportional stratification was utilised to acquire proportionate sample sizes from each stratum. The sample sizes were calculated using the Stat Trek.Com (2021) formula, expressed as  $n_h = (N_h / N) * n$ , where  $n_h$  denotes the sample size for stratum  $h$ ,  $N_h$  represents the population size for stratum  $h$  (*number of households*),  $N$  is the total population size (*total number of households*), and  $n$  is the overall sample size. Consequently, 58 households from Phase I and 82 households from the Phase II resettlement village participated in the household survey, employing the Individual Vulnerability Appraisal Tool (IVA), as presented in Table 1 below.

*Table 1: Representative Household Sample Size for Phase I and Phase II Resettlement Villages*

<i>Settlement</i>	<i>No- of households</i>	<i>Sample size</i>
<i>Phase 1</i>	97	58
<i>Phase 11</i>	136	82
<i>Total</i>	233	140

### **Data Analysis**

We employed a univariate graphical and non-graphical exploratory data analysis (EDA) based on frequencies and percentages to illustrate the responses of households' physical and socio-economic



vulnerability in post-disaster resettlement. The theory of interpretivism, which aligns with the interpretive research paradigm and is underpinned by observation and understanding, guided our research analysis and shaped the interpretation and description of our findings.

## Results

### *Socio-demographic characteristics of the respondents*

With 62% (N=87) identifying as male and 38% (N=54) as female, the gender distribution was well-balanced, allowing for the generalisation of the study's results. In terms of income sources, 97% (N=136) relied on subsistence crop production, 2% (N=3) on boda boda (motorcycle) riding, and 1% (N=1) were involved in small-scale trading. Households with between 6 and 10 individuals accounted for 49% (N=67), while those with 1 to 5 persons represented 29% (N=41), and households with more than 10 persons made up 23% (N=32). Regarding education, 61% (N=85) of respondents had attained primary education, 25% (N=35) had completed secondary education, and those with no formal education were the least represented at 14% (N=20). The age distribution indicated that 31% (N=43) were aged 51-60 years, 22% (N=31) were aged 41-50 years, 19% (N=27) were aged 31-40 years, 19% (N=27) were over 60 years, and the smallest group, 9% (N=13), were under 30 years. Moreover, 81% (N=113) were married, 2% (N=3) were never married, 12% (N=16.8) were widowed, and 4% (N=6) were divorced, as illustrated in Figure 1. The study provided further insights into how physical and socio-economic vulnerability manifests, based on valid responses from a diverse population.

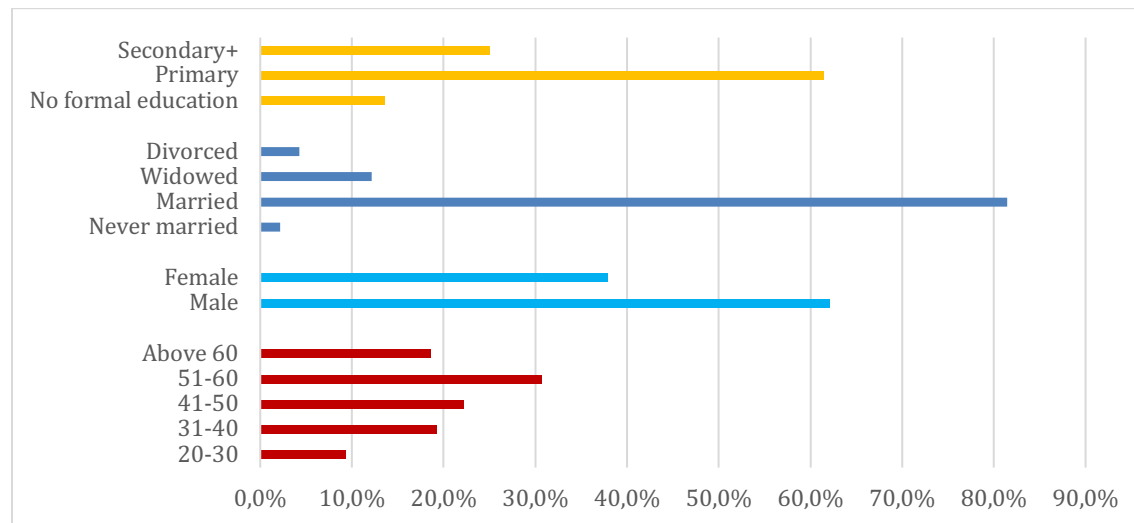
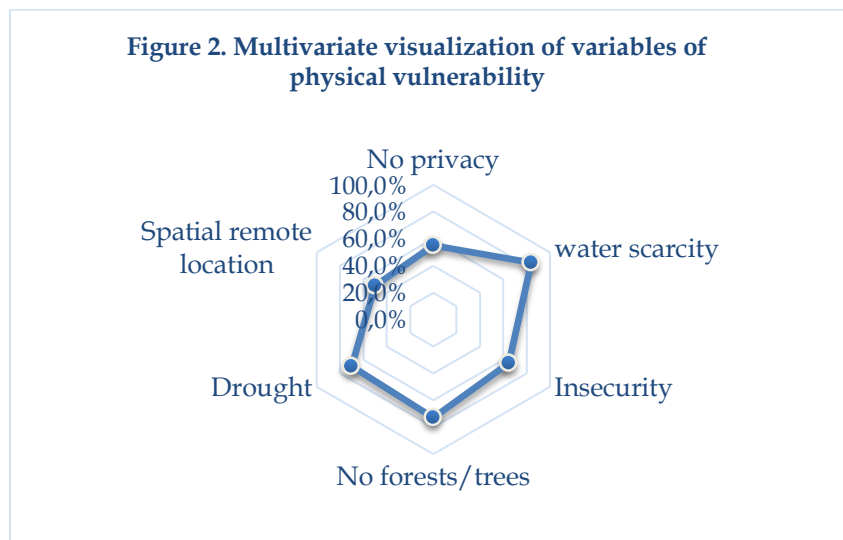


Figure 1: Socio-demographic characteristics of the respondents, Source: Field Data (December 2022)

### *Physical Vulnerability and its effect on livelihoods*

The indicators analysed focused on physical capital, including the design of shelters and physical infrastructures such as roads, schools, health facilities and water and sanitation amenities. Other physical factors considered were spatial location, insecurity as an external threat and environmental conditions like drought, which is viewed as a slow-onset shock. We utilised a radar chart to summarise the multivariate variables of physical vulnerability, as illustrated in Figure 2.



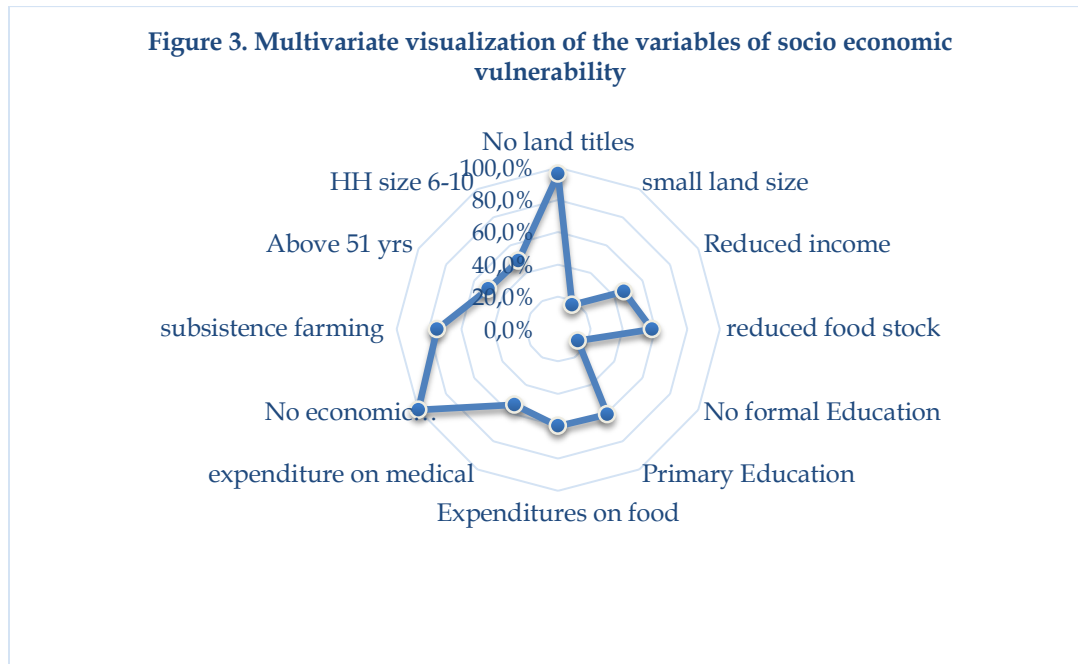
Shelter provides a means of ensuring livelihood security. We observed that the houses in both Phase I and Phase II resettlement villages contained three rooms: two bedrooms and a sitting room. The socio-demographic characteristics indicated that most households comprised between six and ten individuals. On average, a bedroom was shared by more than three people, leading to a lack of privacy. This situation created communication barriers between couples in a household and inhibited independent socialisation, ultimately affecting the physical and social development of teenagers. The resettlement relies on a single tap for water located in Phase I, which occasionally dries up during the dry season, resulting in water scarcity. Respondents reported the effects of this scarcity, including travelling long distances to collect water (62%, N=87) and drinking unsafe swamp water (3%, N=4). Water scarcity restricts other livelihood opportunities due to the time spent fetching water, a non-productive activity. The geographical location of the resettlement, situated in the rain shadow cast by Chesebere cliff on the eastern side, accounts for the drought conditions experienced by the community. Drought is an environmental condition responsible for the food insecurity faced by the survivors. A focus group discussant from Phase I recounted observing rain on Chesebere cliff while the resettlement remained dry and hot, accompanied by strong winds. The remote location creates barriers to accessing markets and educational opportunities, which could broaden the survivors' livelihood prospects. The resettlement has a primary day school supported by the Government through the Ministry of Education and Sports. However, there is no secondary school or vocational training institution within the resettlement. A key informant noted, *"We have a secondary school called Bunambutye Secondary School, but it is far from the resettlement, and we do not have any vocational or training institution."* The socio-demographic data indicated that the average number of students not studying stood at 3.8, compared to 1.9 who were studying. The resettlement lacks trees, leaving the area vulnerable to strong winds, often accompanied by dust storms that cause comorbidities such as flu and cough, presenting a health risk. The absence of trees deprives the survivors of access to wood fuel and other forest products.

**Socio-economic vulnerability and its effects on livelihoods**

Socio-economic vulnerability indicators include the main capitals that influence people's livelihoods. The variables analysed included human capital (skills, knowledge, ability to labour), social capital



(formal groups, networks), natural capital (land), and financial capital (income, available resources). Figure 3 provides a summary of the multivariate variables of socio-economic vulnerability.



The DFID Sustainable Livelihood Framework identifies land as a vital asset for resettlement survivors. Land facilitates livelihood restoration through economic activities such as farming and other business enterprises. We found that 96% (N=134) of the survivors lack land titles. This absence hinders initiatives for making long-term investments in the land, thereby restricting the livelihoods of the survivors to small-scale subsistence peasant farming, which is practised by 97% (N=136).

We report decreased food stocks associated with drought-related environmental conditions (40% N=56). This situation compels survivors to procure food from nearby markets at elevated prices (92% N=129). The decline in food stocks has resulted in food insecurity, affecting 20% of those in resettlement (N=28). Consequently, malnutrition cases, particularly among children, have been reported at the Health Centre III facility (25% N=35). Regarding financial capital, we report a reduction in income earned by the survivors (25% N=35). The income decrease is attributed to the prolonged drought, impacting 40% of individuals (N=56), which has caused crop withering, restricted income-generating activities (35% N=49), poor yields (22% N=31), and limited market access (2% N=3). This situation has adversely affected other livelihoods, leading to a low investment in business and livelihood skills, which impacts 50% of individuals (N=70). Income-generating assets, such as livestock and poultry, are currently scarce in the resettlement, recorded at 30% (N=42). This scarcity has primarily been attributed to insecurity, affecting 65% of people (N=91) from petty thieves and cattle raiders. Consequently, this scenario escalates the risks of poverty coupled with low living standards (29% N=41). Human capital is typically analysed through education levels and household labour. The socio-demographic characteristics indicate that the educational attainment of most households is low: 14% had no formal education (N=20), 61% attained primary education (N=85), 24% attained secondary education (N=34), and 1% attained higher education (N=1). This situation underscores the limited livelihood skills present (100% N=140), employment in informal sectors (88% N=123), and a high dependence on subsistence agriculture (97% N=136), which results in low income



and restricted economic activities due to various challenges facing the agricultural sector, such as prolonged drought causing crop withering (55% N=77) and pests and diseases (35% N=49). The age structure also affects labour capability; the proportions of those aged 51-60 were 31% (N=43) while those over 60 constituted 19% (N=27), within the resettlement, implying a higher number of less productive individuals, which in turn leads to reduced livelihood activities.

### ***Variations in vulnerability among the different social groups***

Vulnerability among various social groups within the resettlement is unevenly distributed in relation to socio-economic status, age, access to resources, and the community and family dynamics of households. Family dynamics, particularly the large household sizes of 6-9 individuals (49%, N=69) and those with 10 or more individuals (23%, N=32), are more susceptible to physical vulnerability linked to a lack of privacy resulting from shared rooms compared to smaller families. They also struggle to meet necessities such as food (62%, N=87). The resettlement predominantly consists of elderly individuals aged 51-59 years (31%, N=43) and those above 60 years (19%, N=27). This contributes to age-based vulnerability, as these elderly individuals find it challenging to engage in essential survival activities such as gathering food. The youth and middle-aged individuals face risks of labour exploitation due to the low wages earned from casual labour on neighbouring farms (89%, N=125). The low level of education, with 14% (N=20) lacking any formal education and 61% (N=85) having attained only primary education, limits the hard skills necessary for diversifying livelihoods. Survivors within this social group are particularly vulnerable to labour exploitation and abuse, as they often secure employment in informal sectors that offer low wages (80%, N=112), compared to 20% (N=28) who manage to obtain full-time employment with a regular salary. In terms of sources of livelihood, 97% (N=136) of households deriving their income from subsistence crop production face economic vulnerability because this sector is highly susceptible to drought conditions that lead to low yields, which in turn diminishes incomes for the survivors, in contrast to 2% (N=3) engaged in *boda boda* 'motorcycle' riding and 1% (N=1) involved in small-scale trade, which are less affected by drought. Regarding social networks, 23% (N=32) of the respondents who do not belong to any community association are vulnerable to exploitation and neglect. They reported challenges in accessing funds and other social support from financial institutions, the Government, and civil society. Concerning access to resources, survivors in Phase I of resettlement experience limited access to water resources (91%, N=127) compared to respondents in Phase II. This situation exacerbates their physical vulnerability due to the long distances they must travel, and the time consumed in collecting water as a non-productive activity.

### **Discussion**

The findings in this study reveal how livelihood assets identified in DFID's (1999) sustainable livelihoods approach are impacted by resettlement and hence contribute to the physical and socio-economic vulnerability of the survivors. The houses have been designed only to have two bedrooms and a sitting room, which caused a lack of privacy for the members of households with large family sizes of 6-10 persons. This created communication barriers between couples in a household and inhibited independent socialisation, which affects teenagers' physical and social development (John, 2022; Weith et al., 2023). The absence of training institutions has forced survivors to travel long distances to access such services. This hinders the community's ability to acquire the necessary skills or knowledge to diversify their livelihoods and improve their living standards within the resettlement, thus perpetuating a vicious cycle of poverty and other associated risks experienced by families or individuals in resettlements. Survivors in Phase II must journey a considerable distance to collect water from the tap installed in Phase I village. This lengthy trek for water means that survivors



waste valuable time that could have been devoted to income-generating activities, engaging in a non-productive task akin to the findings of another research by Barford et al. (2021).

The issue of not having land titles negatively impacts the household's decision to engage in innovative and inventive long-term projects on land due to the uncertainty in their stay in the resettlement. The reduction in food crops produced creates a scarcity of food resources, which creates a rise in the prices of the available food stock in the market (Mavhura, 2020). The human capital of survivors in resettlement remains underdeveloped, as most have attained only a primary level of education. This situation forces survivors to rely heavily on subsistence agriculture and informal employment within the economy, both of which are less productive due to low wages. Such over-reliance on farming makes households vulnerable to socio-economic challenges stemming from agricultural issues, including prolonged droughts, pests, and price fluctuations affecting produce, which in turn impacts the profits and income generated by these households.

Households with large family sizes exceeding six members were vulnerable to physical challenges due to shared rooms. In contrast, those with smaller family sizes reported a reduction in family labour, thereby limiting livelihood opportunities. The age structure of older individuals, particularly those aged 50 and above, indicated a less productive labour force that could not sustain subsistence farming as the primary source of income for survivors in resettlement. Regarding economic status, low incomes earned, and limited livestock and asset holdings rendered survivors in this social group economically vulnerable.

### **Conclusion**

This study reveals how physical and socio-economic vulnerabilities manifest in post-disaster resettlement by focusing on the livelihood assets affected by resettlement. Small rooms and shared spaces are the main sources of the lack of privacy experienced by community members during resettlement. The issue of water scarcity forces survivors to travel long distances to access these resources. Family structure, particularly the age distribution of the elderly and young individuals, creates a significant dependency burden on a few energetic members of the household. Most survivors possess a low level of education, resulting in a strong reliance on subsistence agriculture as their primary source of livelihood. This sector is highly susceptible to environmental conditions and price fluctuations, impacting the income of survivors and contributing to a vicious cycle of poverty. Seasonal movements are the main coping strategy adopted by survivors to mitigate their vulnerability. There is a need for the Government, through the Office of the Prime Minister, to provide incentives that will expand the livelihood opportunities for resettled households. Further research must be conducted on drought patterns to enhance the planning of agricultural activities in the resettlement.

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