RESEARCH PAPER

DISASTER-INDUCED RESETTLEMENTS: THE RESILIENCE OF FLOOD-AFFECTED HOUSEHOLDS IN DAR ES SALAAM, TANZANIA

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ABSTRACT. Floods are increasingly affecting cities around the world. As a result, displacement and resettlement of flood-affected households have become the norm in many parts of the world. While resettlement may be necessary to address flood vulnerabilities, including protecting the lives of those affected, empirical studies on the post-resettlement well-being of the resettled population are scarce. This paper presents empirical findings on the livelihood situation of flood-resettled households in Dar es Salaam. The results are based on key informant and household interviews and focus group discussions with resettled households. The findings show that the resettlement area's location in the peri-urban of the city resulted in various challenges, including inaccessibility to basic facilities and high transportation costs, with households spending an average of TZS 2,000 (~US$1) to reach a public transportation facility, i.e., a bus stand. Resettled households also have lower income levels ranging from less than TZS 50,000 (12%) to between TZS 50,000 and TZS 500, 000 (75%). While weak social ties, a lack of trust among household members, and the social stress of loss of privacy were typical challenges among resettled households, vulnerable groups, particularly women and children, were exposed to increased vulnerability. The observed post-resettlement livelihood situation is influenced by the pre-resettlement conditions of the households, characterized by large household sizes ranging from 5 to 6 members (55%) to more than seven members (35%), low education levels (77%), and informal employment, largely petty trading (56%). The paper suggests that when resettling flood-affected households, the context-specific characteristics of the affected population, such as demographic and socio-economic characteristics, and their needs, be considered to improve post-resettlement livelihood sustainability.

KEYWORDS: Displacement, Resettlement, Livelihoods, Disaster, Dar es Salaam

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INTRODUCTION

Natural disasters are increasingly affecting the world at our times. Natural disasters occur worldwide, with developing countries bearing the brunt of the consequences (United Nations International Strategy for Disaster Reduction [UNISDR] 2015). Such hazards have an impact not only on people's lives but also on their property, economic activity, and public infrastructure. The international disaster databases (UNISDR 2012; UNISDR 2015) and the Intergovernmental Panel on Climate Change (IPCC 2012) have noted an increase in hazardous events over the last few decades. According to the United Nations Environmental Program (UNEP 2012), over the last few decades, developing countries have accounted for more than 95 percent of the fatalities associated with extreme events.

Extreme meteorological and climate events such as floods, droughts, and hurricanes are the most common causes of global disasters (UNISDR 2015). Extreme floods and cyclones significantly contribute to disaster events across the African continent. These include Cyclone Eline in 2000, which affected over five million people in Southern African countries, and the 2010 West and Central Africa flood disasters, which affected 17 countries (Reason and Keibel 2004; Holloway et al. 2013). Floods have also affected Tanzania's commercial capital, Dar es Salaam. Severe floods hit the City in 2011, which resulted in the loss of life, destruction of property and public infrastructure, and the displacement of thousands of city dwellers (John et al. 2014). According to the literature, flood events frequently result in catastrophic disasters resulting in the loss of life and the displacement of others (Douglas et al. 2008).

Climate-related disaster events are increasingly causing internal and cross-border displacement of the affected population worldwide. Raheem and Olorunfemi (2013) confirm that the poor's indigenous coping mechanisms are becoming less effective as their livelihood systems

become increasingly vulnerable to disaster shocks. Natural disasters displaced an average of 25.4 million people per year between 2008 and 2015, according to the Internal Displacement Monitoring Centre (IDMC 2015). According to IDMC, storm events resulted in disaster displacements of 17.2 million people across 144 countries in 2018. Furthermore, more than 17 million people are at risk of being displaced by floods each year, with towns and cities particularly vulnerable (IDMC 2019).

Disaster-led resettlement is one of the IPCC-identified risk mitigation measures implemented gradually (Tadgell et al. 2018). Although the literature emphasizes that resettlement should be developmental, meaning that resettled populations should be better off as a result of resettlement (Correa 2011; World Bank 2004; Perera 2014), empirical evidence for this is lacking (Vanclay 2017). Both the development and disaster-induced resettlement literature show some evidence of improved physical assets, such as housing and some basic infrastructure (Vickery 2017; Li and Song 2009), with adverse effects related to loss of livelihood resources and impoverishment (Nikuze et al. 2019; Mteki et al. 2017; Patel et al. 2015; Cernea 1997). Recent studies have also identified social-cultural impacts such as changes in dress patterns and marriage customs, the loss of tribal folk art, the destruction of social networks, and increased violence resulting from development-induced displacement (Sikka 2020). Arnall (2019) and Rew et al. (2006) have cautioned that developmental relocations are challenging to achieve in practice due to the operational complexities of resettlement policies both in terms of developing coherent policy and achieving effective implementation on the ground. However, while empirical studies have shown that displaced households are better in safer locations, there are concerns about the impact of resettlement on the affected population. According to the literature, some resettled households return to their original settlements to escape the hardships they face in the resettled areas (Haile et al. 2013; John et al. 2014). While relocation is a typical response to a disaster, 90 percent of those relocated return at some point (Raleigh and Jordan 2010). According to Bronen (2015), in the aftermath of a disaster, decision-makers face significant difficulty implementing measures limiting people's ability to return to where they lived. Resettling disaster-displaced people is thus one of the world's current challenges. Furthermore, Wisner et al. (2012) cautioned that problems associated with the inability to return to one's life or to resettle elsewhere voluntarily are inextricably linked to post-resettlement difficulties.

As Arnall et al. (2013) emphasize, the viability of livelihoods is a critical determinant of whether the resettled individuals stay in their new location or return to their place of origin. Furthermore, Guo and Kapucu (2018) observed that the ease of changing livelihood strategies and their outcomes, supported by livelihood capital and institutional context, determine resettlers' intention to engage in conflicts after resettlement. While Guo and Kapucu (2018) combined the pressure-state response framework and the sustainable livelihoods approach to show specific factors affecting disaster resettlement in a rural setting, understanding the livelihood resilience of non-peasant populations, particularly in urbanization contexts, is critical. According to Gong et al. (2021), livelihood resilience is influenced by the external environment, which includes the socio-economic environment, infrastructure levels, and context-specific development opportunities.

When guided by evidenced-based policy, disaster-induced resettlement offers new opportunities for populations in high-risk locations for whom resettlement may be the best option (Kita, 2017; Black et al. 2013). The literature also shows that resettlement outcomes are better when resettled households choose their relocation sites based on their preferences and livelihood needs (Gong et al. 2021; Nikuze et al. 2019). Scholars argue that resettlement as adaptation should be voluntary by allowing the affected people to choose whether or not to participate in the resettlement process, which may provide them with new opportunities (Lipset 2013; Maldonado et al. 2013; Schmidt-Soltau and Brockington 2007). However, the literature emphasizes the difficulties of implementing voluntary resettlement programmes due to the uncertainties faced by resettlers, as well as the disparities in needs, interests, and experiences of individuals and groups within communities (De Wet 2008; Koenig, 2006). Consequently, it is indisputable that there is uncertainty regarding post-disaster management and how to resettle the affected communities better.

With current and projected climate change scenarios and their impacts, population resettlement due to various disasters is unavoidable, and their impacts on people's livelihoods will remain a challenge. Nonetheless, despite the magnitude of current displacement trends, few studies have examined the impact of disaster-led resettlements on people's livelihoods, in developing countries, particularly in the African region. According to Cernea (2000), resettlement's impact on a population depends on the local conditions, type of project, sector, or nature of displacement. Consequently, the intensity of each risk varies, as does the severity of the outcomes. Moreover, in the context of the urbanized flood-prone informal settlements, there is ongoing uncertainty about the resilience of the resettled communities.

This paper investigates the post-disaster livelihood resilience of flood-resettled households and its implication for the planned resettlement programmes. The analysis looked at the pre-and post-disaster livelihoods of the resettled households as conceptualized in the following section.

Conceptual Framework

Resilience is the ability of a system, community, or society exposed to hazards to resist, absorb, accommodate, adapt to, transform and 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 through risk management (UNISDR 2009). This study adopts the UNISDR definition and conceptualizes resilience as the ability to recover from a shock determined by the degree to which the community has the necessary resources and is capable of organizing itself before and during times of need. However, addressing the vulnerable population necessitates a greater focus on human livelihoods. As a result, the livelihood approach plays a vital role in analyzing resilience. Tanner et al. (2015) contend that the livelihood perspective contributes to resilience thinking by emphasising human needs and agency, empowerment, and human rights, as well as considering adaptive livelihood systems in the context of broader transformational changes. Livelihood resilience is an individual's or household's ability to maintain and improve their livelihood opportunities and well-being in the face of physical, economic, and social disruptions. A livelihood resilience approach broadens the definition of resilience beyond the technical approach by considering social and economic factors and the overall well-being of the affected population. However, resilience

is not directly measurable, and attempts to analyse it has relied mainly on quantifiable surrogates or indicators of resilience (Jones and Tanner 2015), with different scholars employing different methods for determining indicators of resilience. The concept of sustainable livelihood is used in this study to examine household resilience. According to Quandt (2018), the sustainable livelihoods approach is one innovative method for determining resilience indicators.

The study derives the livelihood concept from the sustainable development concept proposed by Chambers and Conway (1992) and further developed by the Department for International Development [DFID] (Carney 1998) as an analytical framework for analysing livelihood changes. According to the framework, people's livelihoods are influenced by trends, shocks, and seasonality, which determine their vulnerability context. The framework includes five types of assets for livelihoods: human, natural, financial, social, and physical capital. The capital asset approach of the sustainable livelihoods framework recognizes the importance of non-monetary factors. It allows the inclusion of various indicators ranging from material to non-material such as social, human, natural, and cultural, considered necessary for measuring resilience. As a result, the capital assets approach to livelihoods appears to be the appropriate way of selecting indicators for assessing flood-resettled households' livelihood resilience. Table 1 presents indicators of livelihood based on the sustainable livelihoods approach.

The Study Area

The research was conducted in Tanzania's commercial capital, Dar es Salaam. Dar es Salaam is East Africa's largest city and, by some accounts, Africa's fastest-growing metropolitan area. According to the 2012 National census, the city had a population of 4.4 million, six times that of the next city, Mwanza (United Republic of Tanzania [URT] 2013). It is estimated that 70-80 percent of the city residents live in informal settlements. Flood risk is a major challenge for the city's sustainable growth because of its rapid urbanization, informal settlement development, and exposure to climate hazards (Pan-African START Secretariat et al. 2011; Picarelli et al. 2017). Floods are common in Dar es Salaam with the population in the low-lying coastal areas and along the river valleys more exposed (Figure 1). Approximately 8% of Dar es Salaam's total area lies in the low-elevation coastal zone below the 10-metre contour line, where flood risk is high (Kebede and Nicholls 2012). The World Bank estimates that floods have affected at least 39% of the population, or 2 million people, in various periods. Floods in 2009, 2010, 2011, 2014, 2015, 2017, 2018, and 2019 claimed lives and impacted various sectors. Furthermore, Kebede and Nicholls (2011) estimated that a 100-year coastal flood in the city would expose 30,000 people and assets worth US$35 billion.

Due to the recurring floods in Dar es Salaam, some of the city residents are in a constant state of recovery, which has a cumulative effect of making them poorer. Floods disproportionately affect vulnerable populations, such as children, the elderly, and women (John et al. 2014). The poor are disproportionately affected at the community and household levels and frequently lack the resources to recover from the flood effects. Households in informal settlements take various flood-prevention measures, including the use of sandbags and tree logs, raised pit latrines and doorsteps, provision of water outlet pipes above plinth level, construction of embankments and protection walls, the elevation of house foundations, as well as seasonal relocation (John 2020; Sakijege et al. 2012,). However, most of these methods are ineffective, particularly during flash floods (John 2020; Sakijege et al. 2014), necessitating the involuntary resettlement of the affected population on several occasions. This study looks at the livelihood resilience of households displaced by the 2011 flash floods in Dar es Salaam.

The research site is in Mabwepande ward, Kinondoni Municipality, about 35 kilometres from Dar es Salaam City centre. Mabwepande Ward had 25,460 people, according to the most recent national population census data in 2012. The Ward covers 52.03 square kilometres and has a population density of 489.4 inhabitants per square kilometre with a total of 6,800 households (URT 2013).

Mabwepande is the resettlement site of the city's 2011 flash floods displaced households. A total of 2,200 households were relocated from flood-prone settlements in the city, including Mchikichini, Tabata, Magomeni, Vingunguti, Kipawa, Kinyerezi, Ukonga, Gongo la Mboto, Majohe, and Charambe (Figure 3). Each resettled household received a plot ranging from 300 to 600 square metres. In addition, each household received one tent for a temporary shelter and 100 bags of cement to help with house construction. Other building materials such as iron sheets and timber were also donated to some of the households by various stakeholders.

Table. 1. Indicators of livelihood resilience based on the Sustainable Livelihood Approach

Concept	Variable	Description
Human asset	Household size	The number of household members: Large household size (-), single parent (-), one-person household (-).
	Age	Age composition of the household members: children and very elderly (-)
	Education	Education level attained by the household head: lower level (-)
Financial asset	Employment	Employment status: formal employment (+)
	Income	Household income level : low income (-)
Social	Social networks	Participation in social groups or associations (+) Social networking: no social network (-)
Physical	Infrastructure facilities	Road accessibility (+), Distance to facilities (Long distance-) Access to health care, education, and markets (+)
	Housing	House ownership (+) Housing quality: high quality (+)
Natural	Land	Ownership of land or plot (+) Size of land/plot (large size (+)

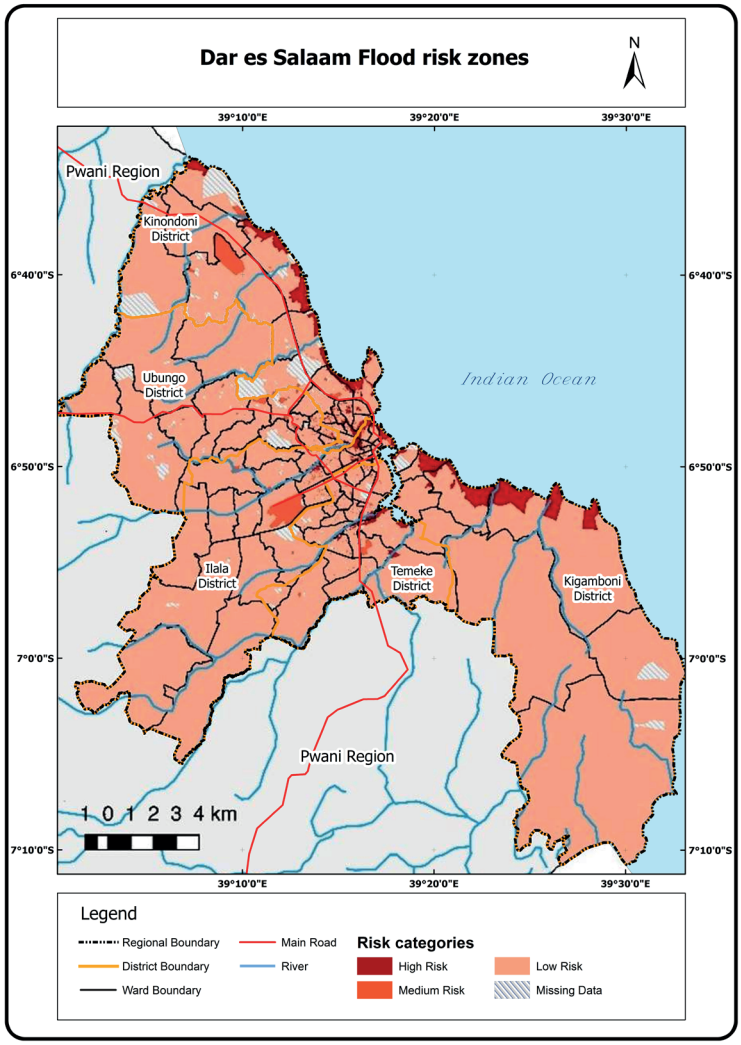

Fig. 1. Map of Dar es Salaam showing flood risk zones (Erman et al. 2019)

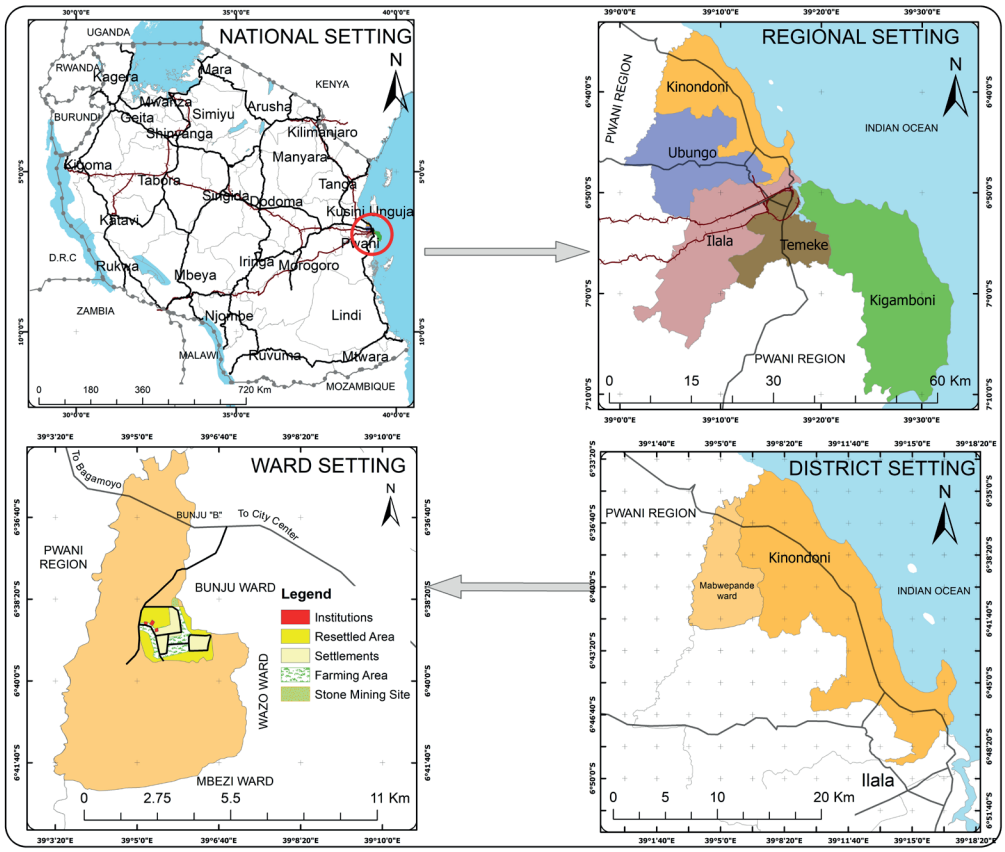

Fig. 2. Location of Mabwepande settlement

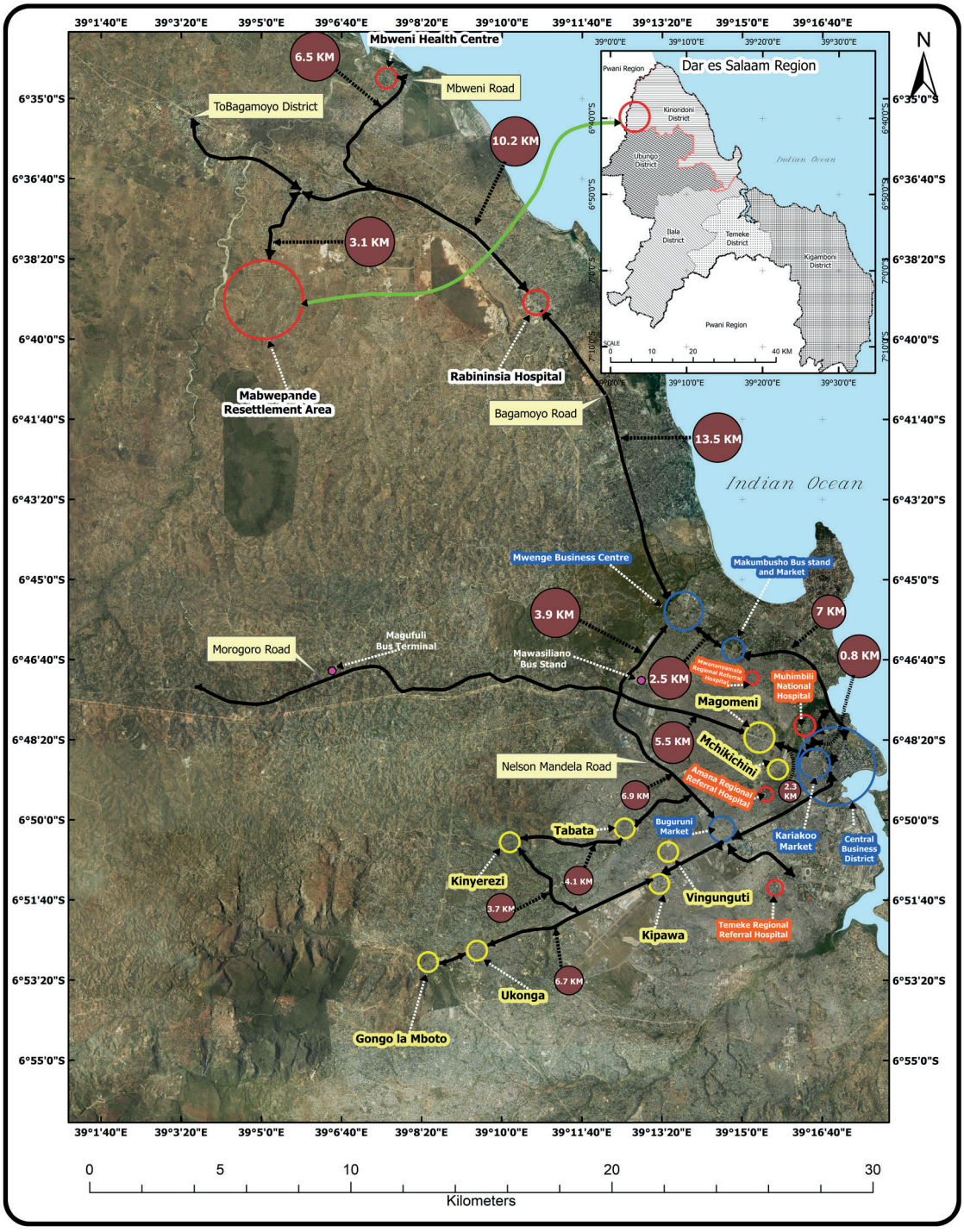

Fig. 3. Location of the resettlement site in relation to the displacement areas, the Central Business District and basic facilities

MATERIAL AND METHODS

The study used a structured questionnaire to conduct interviews with 176 households. For each household, data on livelihood assets were collected regarding the situation before and after the resettlement. Data from household interviews were triangulated with key informant interviews, focus group discussions, and non-participant observations of the physical aspects of household livelihoods. Three focus group discussions were held, one with men, another with women, and one with the youth, to assess their experiences concerning their livelihood situation in the resettled area.

Data was analyzed qualitatively as well as quantitatively. The quantitative analysis entailed the examination of data sets on the socio-economic status of the households, such as age structure, education, and income levels, using descriptive statistics, particularly measures of frequency. The qualitative analysis entailed retrieving and clustering information from focus group discussions, key informants, and household interviews. The qualitative analysis also included extracting direct quotes to illustrate the respondents' responses and contexts. Finally, the study draws analytical conclusions by comparing the study's empirical findings to the existing literature from the previous studies.

RESULTS AND DISCUSSION

The following sections give an analysis of the livelihood resilience of flood-resettled households. The analysis includes a discussion of the households' livelihood assets in the resettled site compared to the situation in the original settlements.

Household Livelihood Assets

The resettled households' livelihoods are characterized by large household sizes and low education levels. According to the household interviews, 55% of the households have 5 to 6 members, 35% have more than seven members, and the remaining 10% have less than five members. In addition, the education level of resettled households was found to be generally low, with 77 percent of the household heads obtaining basic education, i.e., primary, 12 percent obtaining secondary education, and 8 percent obtaining no formal education (Figure 4). Although human assets in terms of household size and education levels were not affected by the resettlement, the assets limited the households' ability to absorb the shock resulting from the resettlement and negatively impacted their livelihoods.

According to the study, most household economic activity was petty trading, followed by employment in the private sector, mechanics, employment in the government sector, masonry, and related works. Food vending, tailoring, quarrying, and general labor were others. Farming, primarily vegetable growing along river valleys, was proportionally lower, and few, i.e., one percent, had no economic activity. Petty trading also predominates the situation after resettlement, accounting for 44% of the household heads, while the percentage of household heads with no economic activity increased (Figure 5).

Most trading activities in the displaced areas occurred in the city centre and at open markets nearby. The resettled area's location in the city's peri-urban area has limited households' access to business and commercial centres, limiting their economic activities. According to the study, 41 percent of the households interviewed chose to conduct their income-generating activities at their homesteads and other locations within the resettled areas, causing businesses to suffer from low sales due to a lack of customers. Those who continued conducting their trading activities in the original areas (59% of the households) had to travel long distances, approximately 35 kilometres, to reach the business location (see Figure 3).

Relapsed economic assets due to location disadvantages

The analysis of household income reveals a decrease, with most households earning less after resettlement than before (Figure 6). Figure 6 depicts an increase in the percentage of households with lower monthly-income levels (below Tanzania Shillings (TZS) 50,000 to TZS 200,000) and a decrease in the percentage of households

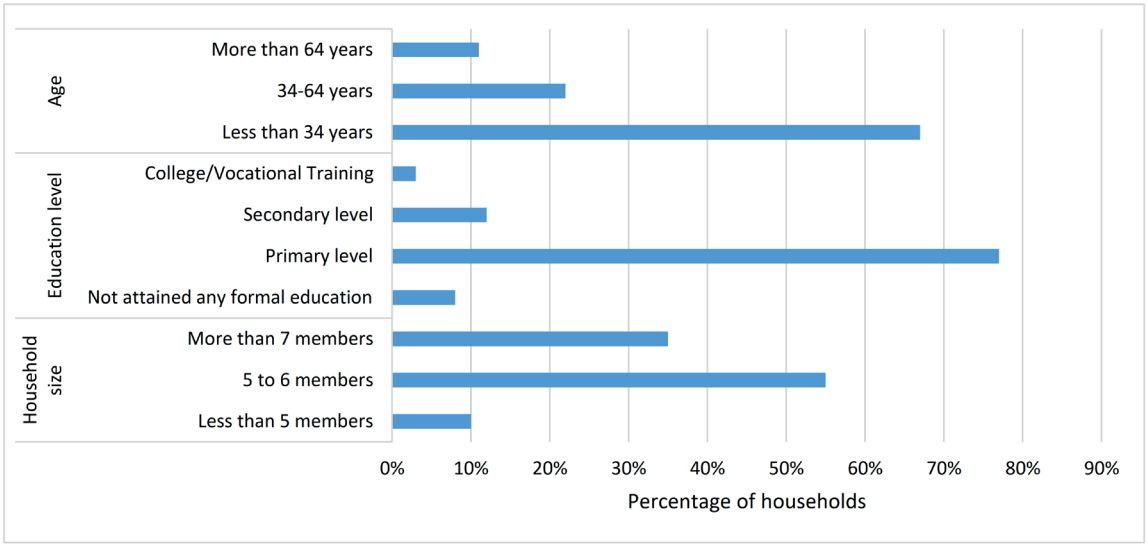

Fig. 4. Household size, education level, and the age structure

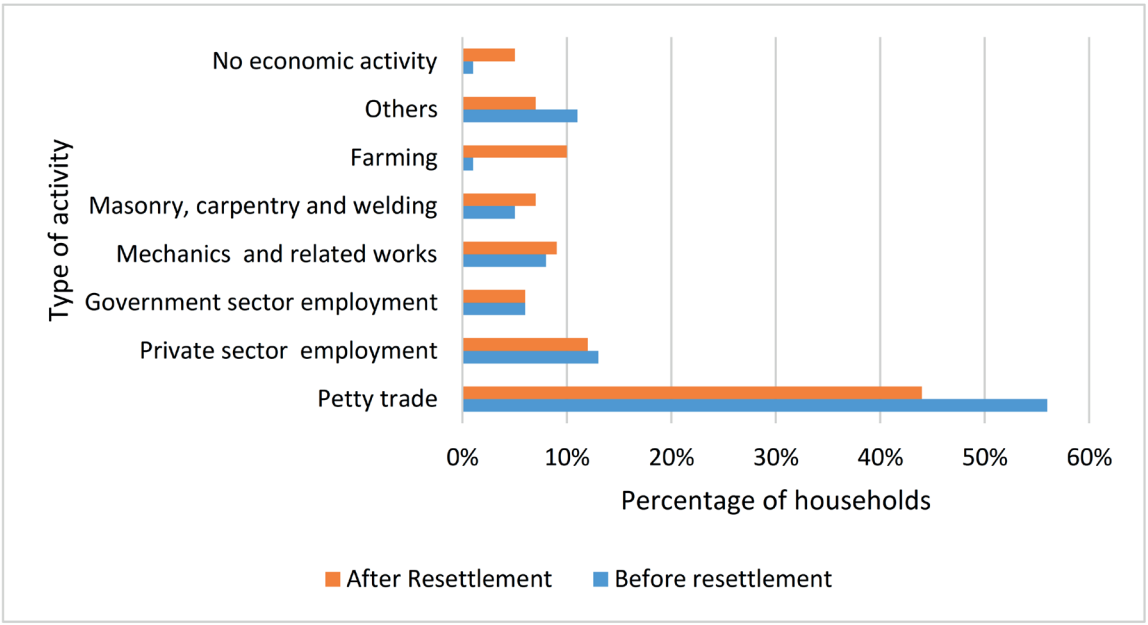

Fig. 5. Household economic activities before and after resettlement

with higher monthly income levels (from TZS 500,000 to above TZS 1,000,000)[1] after resettlement compared to the situation before resettlement.

A focus group discussion with men at the resettlement site revealed that the displacement significantly impacted income generation activities in the new location. While the majority of the households rely on petty trading as a major source of income, the resettlement site's location far from the Central Business District restricts access to trading opportunities within the commercial centres, resulting in a decrease in household income. During an in-depth interview, a resettled woman stated that the new site provides no opportunity for trading activities compared to the former areas, lamenting that she has lost half of her business capital due to a lack of customers in the resettlement area. As a result, the resettlement site's remote location from the business and commercial centres limits households' access to economic opportunities. The findings suggest that locating settlements near business opportunities provides economies of scale for income generation for those who rely on informal employment, such as petty trading. Satiroglu and Narae (2015) contend that a scale of economy that provides abundant livelihood opportunities is the primary reason why displaced people who have returned from the resettlement sites strive to stay in urban centres such as densely populated settlements. The findings suggest that while relocating flood-affected households may address the issue of flood exposure, it may also deprive households of economic opportunities. The findings support the findings of Yong et al. (2017) that resettling people in remote areas reduces resettlers' livelihood resilience.

Destruction of social capital assets

Displacement and resettlement into a new settlement weakened the household's social networks and ties. The separation of household members after the resettlement resulted in diminished social capital. According to the study, 22 percent of households interviewed had members who returned to live near their original settlements for various reasons, including access to schools and income-generating activities. Furthermore, the resettlement impacted networks and ties associated with income-generating activities. One of the male respondents, a masonry worker, stated that his income-generating activities depended on the networks he had established within the former area and its surroundings. He could obtain new clients for his business through social connections, which are scarce in the resettlement area.

Furthermore, findings from focus group discussions and key informant interviews shed light on the disruption of community cohesiveness among the resettled households. According to the women's focus group discussion held at the resettlement site, the diversity of the resettled households' settlements of origin made mobilizing community participation for joint initiatives challenging. An in-depth interview with the Sub Ward Chairperson revealed that a Non-Government Organisation (NGO) that intended to assist resettled households in rebuilding their livelihoods failed due to their unwillingness to cooperate in forming groups due to a lack thereof of trust among them. The findings are consistent with other studies on development-induced resettlement that have confirmed the disintegration of social networks following resettlement (Yntiso 2008; Lupala and John 2012; Singh 2020; Mandishekwa and Mutenheri 2020).

High transportation costs due to increased distance to services

Resettlement resulted in long distances to workplaces and basic infrastructure facilities. While households had close access to health and education facilities and job opportunities in the original settlements, those facilities must be reached over long distances in the resettlement area. For example, whereas a health centre is only 2 kilometres from the settlement, households must travel 35 kilometres to reach high-level health care facilities near the city centre. Similarly, most educational facilities are located up to 25 kilometres away from the resettled settlement. As a result, 30% of the households interviewed sent their children to live with relatives closer to their schools.

Access to public transport is also limited in the resettled settlement compared to the situation in the origin settlements. The resettlement area lacks a public transportation system that connects the settlement to the surrounding areas. As a result, households rely on private transportation, primarily motorcycles, to access various services, including public transportation. The

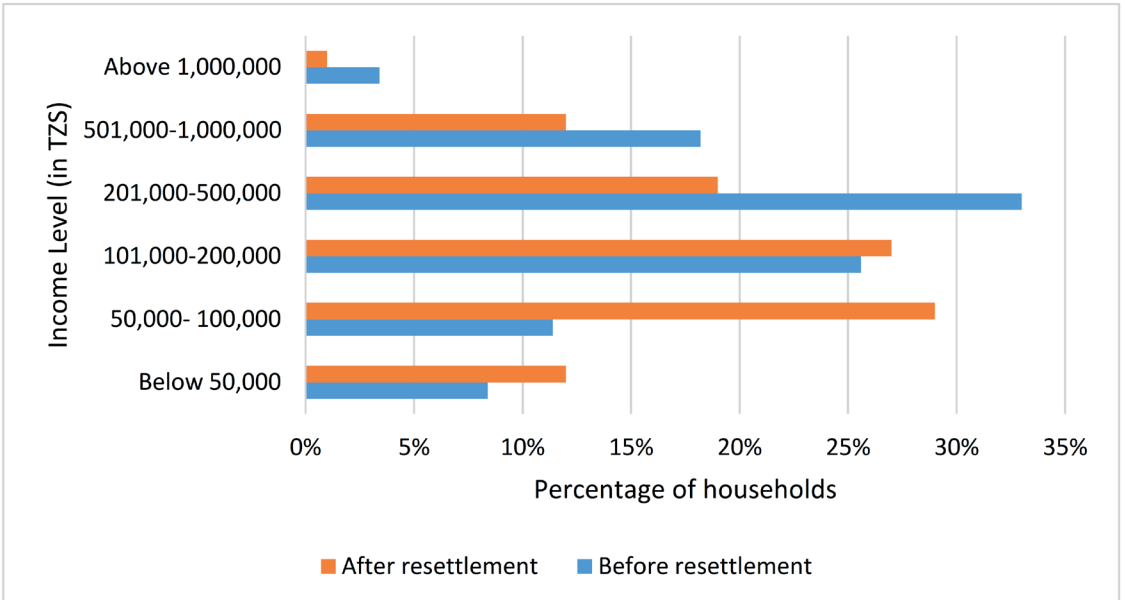

Fig. 6. Monthly household income levels before and after the resettlement

[1] 1 TZS= 0.0042USD (the 2018 exchange rate)

resettled households incur high transportation costs due to an average daily traveling distance of 3 to 5 kilometers in accessing public transportation services, commonly known as daladala. According to the study, it costs at least TZS 2,000 (~US$1) to get to a public transportation facility (bus stop) located approximately 5 kilometres from the resettlement site's centre. The findings are similar to those of Nikuze et al. (2019), who observed that resettlement increased the distance between basic facilities and services, particularly public transportation services. While Nikuze et al. (2019) reported that the resettled households had reasonable access to health and education facilities, this study found out that resettled households had to travel long distances to access both health and education facilities. The preceding suggests that the resettlement site and its proximity to basic infrastructure facilities are essential and may limit resettled households' ability to develop resilient livelihoods.

Social distrust among household members

The increased travel distances have increased transportation costs and altered household travel patterns and behavior. The insights gained from focus group discussions assisted us in better understanding the behavior and social relationships of resettled households. Due to long distances and increased transportation costs in the resettled area, some households, particularly men, frequently stay at their workplaces for a few days or weeks to save money on transportation, according to the study findings. On the other hand, women reported a lack of trust in their husbands when they stayed away from home. A focus group discussion with women revealed that some marriages have become less intact as husbands take advantage of the opportunity to stay outside their homes to engage in cheating. One of the women explained that the husband comes home once a week, sometimes twice a month, to cut transportation costs to work, which creates opportunities for cheating in marriages. Previous scholars, such as Gonzalez and Simon (2008) and Piggott-McKeller et al. (2020), have argued that resettlement can lead to social distrust among community members, particularly when resettled households come from different communities or are resettled in an existing community resulting in a heterogeneous society. However, this study discovered that distrust could occur within a homogenous household, particularly when circumstances entice cheating. The challenge of social distrust among spouses or household members, as opposed to the social distrust between households or community members, reveals a new challenge due to resettlement.

Increased vulnerability of the vulnerable groups

Long walking distances to access schools and health care facilities have increased the vulnerability of vulnerable groups, particularly girls, women, and the youth. Missed classes and school dropouts are common due to the inability of the majority of households to pay for motorized transportation for their school-aged children. A focus group discussion with the youth revealed that most students attend school twice or thrice a week, with others attending only once per week. Poor school attendance leads to school dropouts, as the youth attested during the focus group discussion at the resettlement site. According to the findings, children who drop out of school engage in immoral practices such as smuggling, sexual conduct at early ages, street begging, early marriages, and stealing. According to an elderly respondent, the long distance to school has caused many children to drop out, female students to become pregnant, and others to marry young. In contrast, male students engage in drug abuse and immoral behaviour like robbery.

The study also discovered that the long distances to schools make girls even more vulnerable in the resettled area. Aside from the school dropouts and child pregnancies, the study discovered a case of a female student raped on her way to school. One of the male respondents, the victimised girl's father, bitterly narrated that his daughter was raped on her way to school one morning because she had to walk early to make it in time. The respondent expounded that he reported the incident to the police station and attempted to follow up on it but gave up due to financial constraints. Worse, he pursued the girl from the family, accusing her of causing him double costs: first, the loss of the school fees, and second, the costs of following up the case. The preceding illustrates how vulnerable groups have become even more vulnerable due to resettlement.

Social stress due to loss of privacy

Households in the resettled area experience social stress due to the loss of social intimacy caused by loss of privacy. According to the focus group discussions with men and women, some households are denied privacy to social lives after resettlement. The resettled household structure[2], which depicts the traditional extended families in the African context, poses a challenge in using the limited spaces provided by the one or two-bedroom houses. A female respondent explained that the issue of intimate relationships is a challenge for spouses because the spaces are insufficient to facilitate lovemaking due to sharing the limited space with children and other family members. As a result, lack of space is one of the sources of stress for households struggling to meet their social needs. The lack of privacy observed in this study differs from what was observed by (Nikuze et al. 2019), who found that resettlement caused a lack of privacy due to the design and nature of post-resettlement houses, which allowed households to see what was going on in the neighbouring household. However, Diwakar and Peter (2016) noted related findings of children exposed to their parents' sexual activities due to a lack of space and privacy following involuntary resettlement. The findings support Scudder and Colson's (1982) theory of resettlement, which states that relocation is a stressful experience, whether voluntary or involuntary and that the early stages of the process are the most stressful.

CONCLUSION

This paper investigated the resettlement of flood-affected households and the resulting livelihood conditions. It emphasizes that households in flood-prone areas have poor livelihood assets, such as large household sizes, low education levels, and self-employment primarily in the informal sector. According to the study, displacement and resettlement of flood-affected people from high-risk areas may be considered an appropriate long-term life-saving strategy. However, the ability to sustain life through resettlement does not guarantee livelihood resilience.

[2] The average household was 4 to 6 people, with the majority of households consisting of a father, mother, children, and relatives of both sexes. In-laws were present in some households.

While the resettled households are free from flood hazards, the empirical findings show that the resettlement resulted in several non-flood but place-related challenges, including the inability to access income-generating activities. Other challenges include reduced household income, high costs in accessing public services and facilities, and weakened social capital assets. As a result, the resettled households have been liberated from flood vulnerability but are struggling to build their livelihoods. The findings support the argument that resettlement is a complex phenomenon with various negative socio-economic consequences on the livelihoods of the resettled households.

The study found that the socio-economic characteristics of displaced households influence their post-resettlement livelihood situation. Large family sizes, low education levels, and self-employment primarily in trading activities limit households' ability to employ alternative livelihood strategies in the resettlement area. The study also concludes that a mismatch between household livelihood needs and the resettlement area negatively impacts resettled households. Poor access to the areas for income-generating activities, such as the Central Business District, prevents poor households from earning an income. Policymakers need to pay attention to understanding the displaced households' socio-economic characteristics to optimize the protection of their socio-economic assets and thus improve their livelihood sustainability. The government also needs to understand human choice during resettlement and provide options for resettlement areas for the affected population to make decisions based on their livelihood situations.

The findings also revealed that women and the young, particularly school-age children, are the most vulnerable following resettlement due to challenges in sustaining their livelihoods. School dropouts, early marriages, engagement in smuggling, and other immoral behaviors necessitate reconsidering their needs in the resettlement programs now and in the future. In addition to focusing on physical relocation as a strategy for disaster mitigation, future disaster-led resettlements should consider incorporating support projects for vulnerable groups such as low-income and those employed in the informal sector, women, and youth.

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