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Climate hazards, migration, gendered exploitation, and the 'sex-for-fish' economy in Rwenzori region: Implications for development to Uganda

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ABSTRACT

Climate change has intensified the occurrence of natural hazards, leading to widespread forced relocations across the globe. These events have significantly reshaped socio-economic and livelihood pathways in both rural and urban landscapes. This study explores the gendered impacts of climate-induced migration and how women cope with and navigate these challenges in Muhokya resettlement village, Rwenzori region of western Uganda. A cross-sectional research design comprising of a survey of 171 households, 4 focus group discussions, and 20 key informant interviews was used. Quantitative data were analyzed using frequencies and one-sample t-test, while thematic and content analysis were applied to qualitative data. The findings reveal that most women were forcibly displaced after losing their homes to floods. The consequences of displacement have been severe, including increased school dropout rates among girls, early marriages, heightened vulnerability to HIV/AIDS, engagement in transactional sex, denial of conjugal rights, and rising cases of gender-based violence. Limited access to healthcare services, particularly antenatal, sexual, and reproductive health care has further exacerbated women's vulnerability. The coping mechanisms, such as survival-based practices like "sex for fish," have proven unsustainable and harmful. The study proposes strengthening local women-led self-help groups to enhance access to livelihood assets, integrating gender-responsive livelihood training within resettlement programs, increasing access to government livelihood initiatives, and improving healthcare and psychosocial support services. Establishing inclusive community decision-making platforms can also enhance women's agency in adaptation planning. These interventions offer practical pathways for reducing gender disparities and promoting equitable resilience in line with Sustainable Development Goals 11 and 13.

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1. Introduction

Global environmental hazards are reshaping socio-economic, livelihood systems and development pathways in significant ways (Field and Barros, 2014; Tol, 2018). Although climate change and the ensuing hazards continue to have multiple impacts in developing and developed countries, the most significant and devastating effect is forced displacement and migration (Piguet et al., 2011; Kaczan and Orgill-Meyer, 2020). About 38 million people were internally displaced globally in 2021, with 23.7 million displaced by natural disasters such as floods and only 14.4 million forced to migrate due to conflict and violence (IDMC, 2022). The World Bank projects that 216 million people across the world could be forced to migrate internally by 2050 due to climate hazards (Clements, 2023). While climate change and its hazards have had diverse impacts worldwide, developing countries in Asia, Latin America, and Africa are the most affected because of limited adaptation and coping capacities. More specifically, sub-Saharan Africa bears the heaviest brunt with projections indicating that it has 86 million internal climate migrants (World Bank, 2021). The region is affected because of high poverty levels, low technology, and heavy reliance on biomass as a key energy source.

The experiences in Eastern Africa mirror those in Western Africa. For instance, environmental change could force 32 million people to migrate to West African countries by 2050. Desertification, rising temperatures and erratic rainfall patterns in the Sahel region have kindled inter-and intra-community conflicts and accelerated internal and external migrations (Eboreime et al., 2025). The Lake Chad basin, a resource shared by Chad, Niger, Cameroon and Nigeria — has experienced multiple crises. In the Sahel region, Chad hosts the largest number of refugees and asylum seekers followed by Niger; most of whom have migrated due to either drought or floods, or both (Eboreime et al., 2025). Nigeria has faced the heaviest brunt of climate migration in West Africa as 2 million people have been displaced by floods and an additional 5 million people are at risk of displacement (IOM, 2024). In Ghana, the 2023 floods displaced about 26,000 people in addition to the destruction of property and accentuating food insecurity (Quarm and Dadzie, 2025). Southern Africa has equally been affected. For example, Cyclone Idai caused widespread devastation forcing a significant number of people to migrate in Mozambique (Mongo et al., 2020)). Yet, many people continue to migrate across the global south because of secondary and covert effects including failed harvests, drought, conflicts and violence, and increased pests and diseases all of which are informed by environmental change.

In Uganda, approximately 12 million people could forcibly migrate due to climate factors by 2050 (Rigaud et al., 2021). However, most climate migrants could be in highland areas because climate hazards mainly occur in mountainous landscapes (Kisira et al., 2022; Ssennoga et al., 2022). Yet, even in areas where climate hazards have not been the direct cause of migration, secondary impacts such as climate-induced conflicts, pests and diseases, and hunger have covertly catalysed migration through the multiplication of threats (UN Women, 2023). While 'one in two climate migrants could be African by 2050' (Clements, 2023), climate migration still lies on the periphery of scholarly debates. Especially the in-situ gendered dynamics and coping strategies in resettlement areas. This forms the research gap for this study. Most studies focus on conflict-induced migration and yet climate change and its hazards trigger more migration than conflicts (Balsari et al., 2020). This article draws on research conducted among the climate-induced migrants at Muhokya camp in Kasese district, in the Rwenzori region. A mix of qualitative and quantitative approaches were used to explore the varied impacts of climate-induced migration and coping mechanisms that the women and girls deployed to build resilience. In this study, sex work, extramarital relations, and making love for fish as an in-kind payment featured significantly in the interviews, focus group discussions, and survey. The 'sex for fish' phrase was adopted to highlight how climate migration has compelled women to go beyond the socially acceptable and 'normalized' versions of livelihoods by adapting "extra-legal" (de Soto, 2000) forms of livelihood and coping strategies. This study contributes to climate migration scholarship by: first, exploring how climate hazards have affected the lives of women climate migrants. Second, examines the socio-economic assets that women access to support their livelihood in the resettlement village. Third, explores how women climate migrants respond to and navigate the challenges brought by climate-induced migration. In the next section, we deploy the social construction theory to show how socially constructed stereotypes and rooted cultural rigidities inform and amplify the precarious socio-economic conditions which women endure at the Muhokya climate-induced IDP camp in Kasese district. Culture, tradition, social norms and practices dictate what women can and cannot engage in, and the pressures that come with the multiple socially ascribed roles and responsibilities at household and community levels.

1.1. Social construction of gender theory

The social construction theory posits that gender is not a fixed attribute but rather a socially constructed concept that varies across societies (Mwondha, 2018). The roles and responsibilities assigned to women and men are products of social and cultural norms—what West and Zimmerman, (1987) referred to as socio-cultural "engineering". While many societies may share homogeneity in attributes such as race, identity, and ethnicity, none—whether in the Global North or South—ignores the gender dimension. The construction of men and women in contrasting ways results in differentiated responsibilities. In the African context, particularly in rural areas, cultural norms overtly and covertly dictate that men work away from home, primarily in the public sphere. They are responsible for provision of the shelter and accumulation of wealth for the household. Conversely, women are expected to play supportive roles—often undervalued and not recognized as work—including agricultural activities to meet household dietary needs, childbirth, and caregiving for the elderly, the sick, and children. Moser (2012) conceptualized these as the "triple roles" of production, reproduction, and community management.

The performance of women's triple roles—production, reproduction, and community management—has been increasingly complicated in the era of climate change. Women are primarily responsible for food production to meet household livelihood and nutritional needs. Consequently, failed harvests due to drought and reduced agricultural activities resulting from climate-induced

migration place additional pressure on women, exacerbating household food and nutritional insecurity, calorie deficiencies, and stunted growth among family members. Similarly, climate migration, often perceived as a coping and adaptation strategy, has not alleviated women's burdens; rather, it has amplified them. For instance, migration has disrupted food production through insecure land tenure. At the Muhokya camp, climate migrants have been prohibited from cultivating perennial crops due to land conflicts. Reduced agricultural activity has fueled food insecurity, forcing migrant households to rely on humanitarian aid (McMichael, 2014). Regarding reproduction, women shoulder social reproduction roles within households and society. Labour is reproduced through childbearing and caregiving with Vogel (1983), noting that women "replace the labour-power necessary for production" (p.144). Women also engage in provisioning, caregiving, and nursing of the sick and elderly—roles remunerated "in the coin of love and virtue" (Fraser, 2016: 101). However, women's ability to effectively perform these roles depends heavily on environmental conditions such as precipitation levels, which influence food availability and household resources. Adverse conditions like floods and landslides force migration to safer areas, yet migration often amplifies risks for women and girls. For example, lack of access to clean water in camps compromises hygiene and health, increasing vulnerability to trafficking, with data showing that 71% of victims are women. Migration may also lead to loss of social networks, forced labour, and sexual exploitation of women. Thus, climate change disproportionately affects women compared to men by intensifying existing pressures related to production, reproduction, and caregiving roles (Moser, 2012).

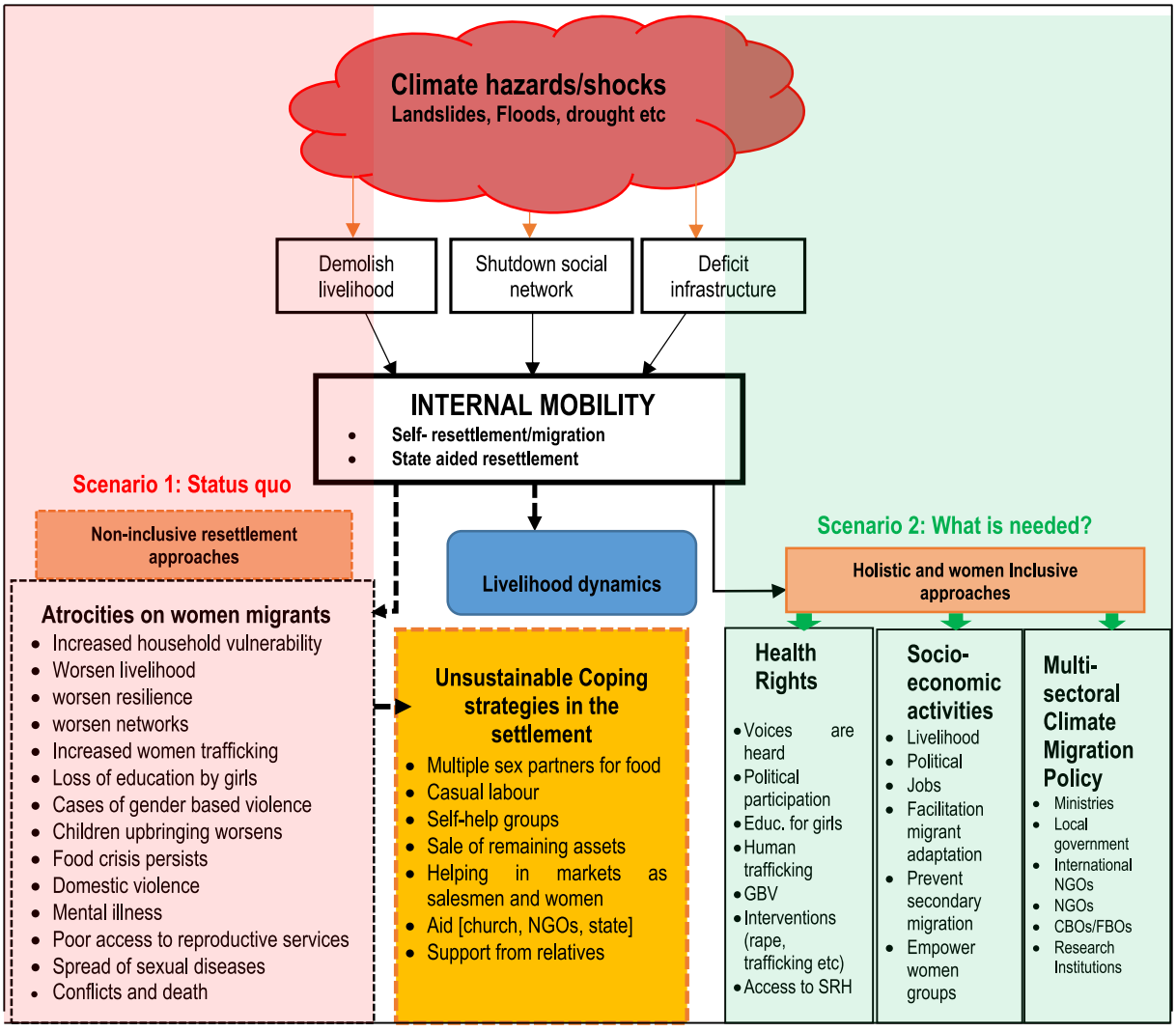

Fig. 1. Conceptual framework. This framework shows the relationship between climate hazards and forced migration, and how these result in gendered livelihood disruptions, social vulnerabilities, and coping mechanisms among displaced people. It also highlights institutional responses and barriers to resilience and recovery by highlighting the possible reforms. (Source: Authors).

1.2. Conceptual framework

In this study, we conceptualize climate-induced migration as "forced migration" triggered by hazards such as floods, landslides, and mudslides. Oftentimes, these events impose life-taking and disastrous shocks such as infrastructural loss by households and local communities. This form of migration stands in contrast to conflict-induced migration, where people are forced to abandon their homes because of war, conflict and other forms of violence. In our case, which focuses on climate migration, flood and landslide events often destroy livelihoods, shatter social networks, and damage key infrastructure. Climate-induced migration tends to be sudden, with patterns that are often complex and unplanned, conditions that heighten the vulnerability of affected individuals, most of whom are women. Women are disproportionately affected because of their gender roles and household responsibilities. As indicated in the social construction theoretical orientation and conceptual framework, disrupted livelihood patterns, social networks, and related infrastructure due to environmental change cause dramatic changes in the lives of migrants as shown in Scenario 1 (See Fig. 1).

For the women, migration accentuates their vulnerability because society and culture dictate that they are responsible for providing household necessities including food and nutritional requirements, nurturing children caring for the elderly and the sick (Borràs-Pentinat, 2024). Although several 'seemingly viable' coping and adaptation strategies were deployed by migrants to counter emerging challenges triggered by climate change, the realization of improved livelihood outcomes especially for the displaced largely depends on their abilities to effectively utilize one or a combination of the available resources and successfully navigate challenges such as government policies, institutional rigidities, and societal cultures. Scholars have argued that in the displacement contexts,

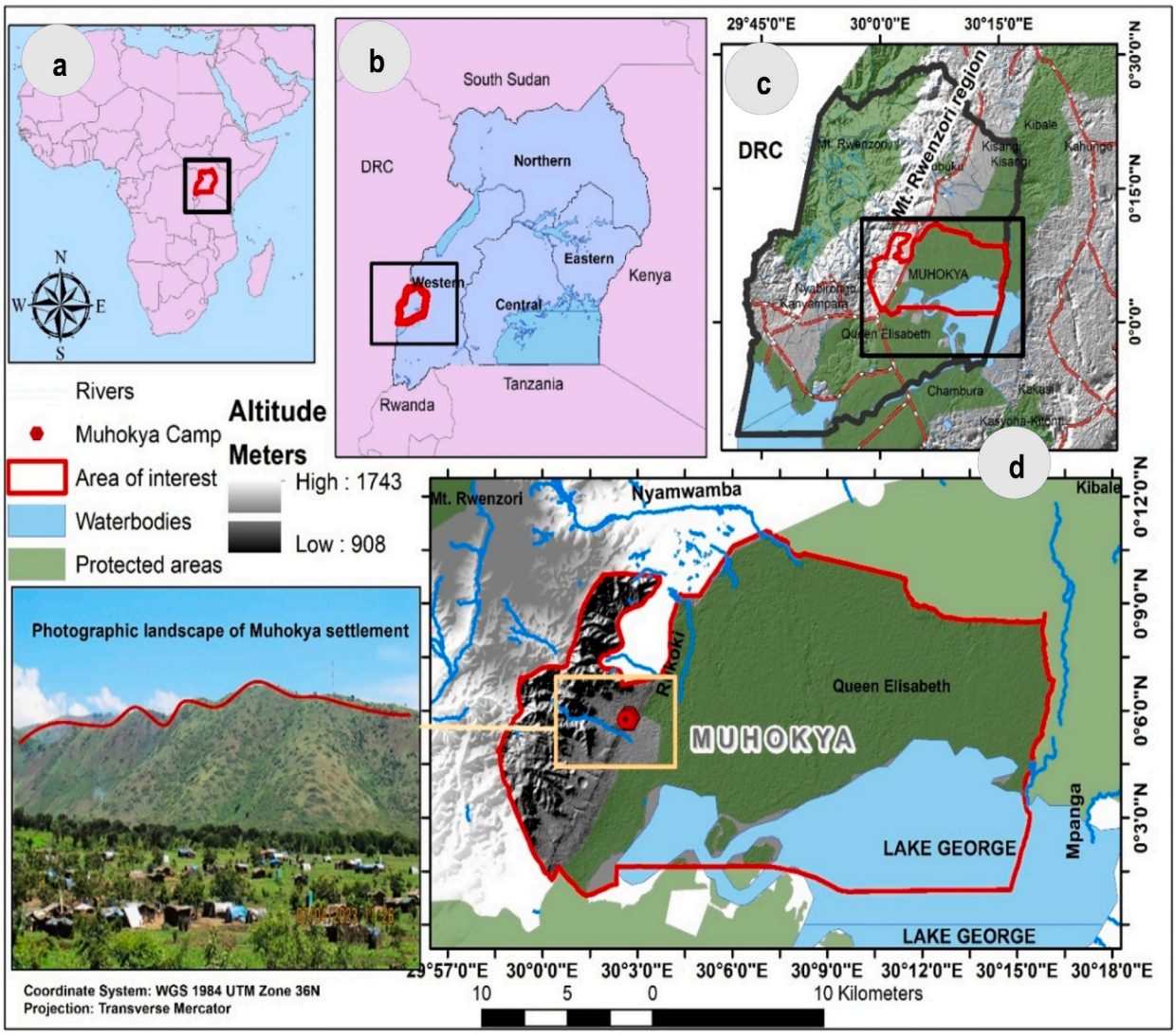

Fig. 2. Location of the study area and its topographic landscape. Map (a) shows Uganda's location within Africa; Map (b) illustrates the location of Kasese District in Uganda; Map (c) indicates the location of Muhokya Sub-county within Kasese District; and Map (d) shows the location of Muhokya IDP camp along the Bwera–Bwezi Highway. On the left is its photographic landscape taken in 2024 August by first author. (Source: Second author).

opportunities for exploiting available resources are often limited, as capabilities vary across displaced populations due to unevenly distributed social networks, capitals and skillsets (Serwajja and Refstie, 2023). The women covertly resort to unsustainable and socially condemned coping, adaptation and livelihood practices, including transactional sex for fish - a scenario we termed 'sex for fish' because of the heavy burden imposed by culturally prescribed roles of provision and care. These issues underscore the urgent need for state and non-state actors to adopt holistic and gender-inclusive approaches especially for climate migrants to narrow the widening gender gap and ensure that no one is left behind.

Although women migrants at Muhokya may have access to various forms of capitals that inform their livelihoods, such as social capital in form of individual social relations and networks/connections (Serwajja et al., 2024), many continue to grapple with multiple constraints. Many women migrants neither own nor rent land, cannot engage in waged employment outside the home, and lack financial or social capital, networks, and connections that could enhance their livelihood options. The Muhokya settlement not only lacks adequate land but is also perceived as unproductive for crop production. Consequently, women cannot meaningfully engage in better coping, adaptation, and recovery strategies. The capacities of women to navigate climate shocks and recover after disruptive floods and migration is limited for some households or virtually non-existent for others. As a result, they are often compelled to adopt precarious livelihood strategies, such as providing labour in exchange for food rations and engaging with multiple sexual partners to meet household needs. This underscores the urgent need for sustainable policies that consider women's practical and strategic needs and amplify their voices worldwide, especially in Uganda. As such, this study seeks to: (i) examine the impact of climate induced resettlement on women migrants, and (ii) explore the coping strategies women migrants employ in response to challenges arising from the climate-induced resettlement camp in the Kasese sub-region. These issues are best addressed through a cross-sectional design that integrates both qualitative and quantitative techniques.

2. Methodology

2.1. Study area

The study was conducted in climate-induced IDP camp of 'Muhokya' located in Muhokya Town Council one of the subcounties of Kasese district in Mount Rwenzori. Muhokya is nestled between the Rwenzori Mountains to the north and the plains extending toward Queen Elizabeth National Park and Lake George to the east (See Fig. 2). It is located between latitudes 0° 3′ 0″ to 0° 9′0″ and longitude 30° 0′0″ to 30° 3′0". The sub-county's terrain transitions from the foothills of the Rwenzori range to lower-lying flatlands with elevations ranging from 908 m to 1743 m above sea level. Nyamwamba, Nyamagasani, Kanyampara, and Rukoki rivers drain the area of Muhokya settlement (Barasa et al., 2022).

The region has an alpine climate with two distinct seasons MAM and ASON. Annual precipitation typically falls between 800 mm and 2000 mm, but in the elevated areas of the Rwenzori Mountains, it can reach 2,800 mm (Sekajugo et al., 2024). The lower parts of Muhokya sub-county face flood and the upper area grapples with landslides due to its topography and heavy rainfall received in the two rainy seasons. The geological makeup of the region includes formations from the Kilembe series, associated with the Buganda-Toro system. This consists mainly of argillites with basal quartzite, gneisses, amphibolites, rift valley sediment phyllites, and Tooro schists. This depicts the complexity of the area's geological history. Soils in the area constitute alluvial deposits, black loams, peat sand, and clay loams (FAO, 2015).

Fig. 3. (a) School classroom and (b) toilet facilities. The shared use of these toilet facilities has been reported to increase the risk of sanitation-related health problems, such as genital itching, particularly among women. Photographs taken by the first author in 2024.

2.1.1. The climate-induced IDP camp in Muhokya: an overview

The Mountain Rwenzori region has grappled with successive climate hazards of varying magnitude including flash floods, and landslides for a long time (Tibara et al., 2023; Masika & Barakagira, 2024). The disaster events and natural hazards recurrent in the region have been mainly triggered by heavy rainfall and conditioned by the steep gradient, and land use and land cover change in the recent decades. For instance, over 255 landslides and 59 flood events were documented in a period of just one year between May 1, 2019 and May 30, 2020 (Sekajugo et al., 2022). More landslides and flood events re-occurred in 2014, 2015, 2018, 2022 and 2024 (Tibara et al., 2023). The 2022 landslide and flood events displaced a total of 1820 people, destroyed property and led to 16 deaths (Serwajja et al., 2024). The latest flood event of May 2024 led to death of 18 people and others went missing (United Nations Office for the Coordination of Humanitarian Affairs (2024).

The recurrent environmental disasters compelled some of the affected people to seek refuge in a relatively safe place in the lowlands of Muhokya sub-county, an area which overlooks lakes Edward and George, on the route to the Democratic Republic of Congo (Serwajja et al., 2024). While many of the forcefully displaced people continue to live in self-constructed makeshift structures made of mud, wattle with tarpaulin as roofing material for close to six years. the appalling socio-economic and housing conditions forced some of the migrants to abandon the Mukokya IDP camp (see Fig. 3). At the time of conducting the research in 2024, approximately 220 households with an estimated population of 900 people lived in the Muhokya IDP camp. In fear of responsibility amid already shattered livelihoods, some men abandoned their households and remarried women in neighboring villages, while others lost their lives, resulting in approximately 170 out of the 220 households being female-headed. The camp has only two mobile toilets, resulting in widespread poor hygiene, with human excreta openly scattered throughout the settlement.

2.2. Research design and data collection approaches

A cross-sectional research design comprising of qualitative and quantitative techniques was deployed for two reasons. First, owing to the exploratory nature of the study; and second, the research objectives the study sought to answer. This study examines (i) how climate induced migration affected the lives of women; and (ii) the ways in which women climate migrants respond to and navigate the challenges. Collecting appropriate data on lived experiences in the resettlement required qualitative research methods. The quantitative methods helped in assessing the community perception towards the impact of resettlement on women. The quantitative and qualitative methods complemented each other by allowing data triangulation which, in turn, enhanced reliability and validity. For instance, the interviews and focus group discussions were useful in understanding the lived social realities and reasons behind specific coping and adaptation strategies of the climate migrants. In essence, the qualitative methods uncovered the embedded twists and turns including answering why specific strategies are adopted, issues that were not established from the survey (Bryman, 2004).

2.2.1. Individual in-depth interview

Individual in-depth interviews were conducted to collect data from the climate migrants. Several scholars have justified the use of interviews, arguing that they allow a “thorough examination of experiences, feelings, or opinions that closed questions could never hope to capture” and provide a “framework within which respondents can express their own understanding in their own terms (May and Perry, 2022). Indeed, interviews provided respondents with the opportunity to articulate their lived experiences in the Muhokya IDP camp. Given the transitional nature of the population, with many IDPs moving in search of employment and other livelihood opportunities, it was essential to employ a method capable of capturing their realities. Consequently, individual in-depth interviews were deemed the most appropriate approach. Three categories of informants participated in the study: local council leaders and climate migrants, both men and women. Participants were purposively selected, with climate migrants chosen for having relocated from the floodplains of Kanyangeya to Muhokya IDP camp, and local leaders selected due to their positions within the camp. A total of 20 interviews were conducted.

2.2.2. Focus group discussions

Focus group discussions were conducted to bring out additional lived realities of the climate migrants and cross-validation the information from the survey and interviews. Scholars such as Kim, (2023); Kostet, (2023) and Nalwanga et al., (2025) argue, unequal power relations emanating from gender, education, age, and class differences that often exist during interview sessions have an impact on how interview sessions are conducted and determine the nature of the data obtained. These differences in power hierarchy were counteracted through encouraging participatory and freedom to speak by the participants. When the informants discussed the implications of climate-induced migration on their communities and the ensuing consequences in the presence of and with fellow camp members, fear and resentfulness reduced substantially. The FGD participants who were often 8 in each group were purposively selected because of their lived realities before and after moving to the IDP camp. In total, 4 FGDs were conducted where two were for female participants including one for young (between >18 and 25 years) and the other for adults (25–45 years). The same criteria were applied to the male participants. The young participants comprised of majorly those who are not married and adults comprised of the married and cohabiting.

2.2.3. Survey

We also deployed a household survey where a semi-structured questionairre was administered on 171 household heads through face to face interviews. The total number of migrants was about 1,875, with about 200 households (Basaija, 2023). A sample of 171 households was selected from a total of 200 households in Muhokya. The used sample size is higher than the minimum sample size of 132, based on Krejcie and Morgan (1970), making it adequate for the study. The quantitative responses were useful in computing the

cross-tabulations and relationships between the variables of interest. We deployed a research-assisted household survey method to support data collection We recruited four graduate research assistants including two women and two men from within and near the camp. The research team continuously monitored and observed the assistant during the interviews to ensure the quality of data collection and facilitate smooth interactions. Engaging research assistants from the community facilitated rapport, reduced mistrust, and enabled participants to express themselves freely. Familiar with the local languages, including Lukonjo and Kiswahili, the assistants translated the English-based semi-structured tool during data collection. Prior to data collection, the team conducted training of research assistants. The ethical issues during data collection, including confidentiality, risks of the exercise, and voluntary participation were explained to the research assistants and later to the respondents. The age range of the participants was between 18 years to more than 66 years of age. Overall, each of the three data collection methods (interviews, focus group discussions and survey) complemented each other. The multiple methods, also known as triangulation, was helpful in cross-validation and corroboration of the outcomes of each method. For example, the information from the survey and individual interviews was cross-validated in the FDGs to ensure validity and reliability of the research outcomes. Before fullscale data collection, the team with the research assistants conducted pre-testing to standardize question interpretation and translation.

2.3. Ethical consideration

The Research Ethics Committee of Makerere University approved this study. Community-based research focal persons and coordinators were identified and briefed on the study's objectives and questions to ensure cultural sensitivity and access. These coordinators included the district technical personnel and community leaders. They guided the research team to local governance structures and management and leaders of the settlement. Each facilitator was responsible for liaising with their respective communities, leveraging their insider status to foster trust, identifying potential respondents, and facilitating data collection. To maintain confidentiality, all the collected data were anonymized and used solely for academic and publication purposes. In January 2025, the

Table 1
Socio-demographic profile of the respondents (n = 171).

Factors		Male (%)	Female (%)	PNS (%)
Sex	sex	40.4	57.3	2.3
Duration	1 year	1.8	2.3	–
	2 years	38.6	53.2	3.10
Age (years)	18–35	11.7	18.1	1.2
	36–60	24.0	33.9	0.6
	>60	4.7	5.3	0.6
Education	NAS	9.9	18.1	1.2
	Primary	21.1	26.9	1.2
	Secondary	8.8.	9.9	–
	Tertiary	0.6.	2.3	–
Marital status	Cohabiting	6.5	5.3	–
	Married	28.2	27.6	1.8
	Divorced	0.6	5.3	–
	Separated	2.9	17.1	0.6
	Not married	2.4	1.8	–
Tribe	Bakonjo	28.1	42.7	1.8
	Baganda	1.8	1.2	–
	Bakiga	4.1	5.3	–
	Banyarwanda	3.5	2.9	0.6
	Mufumbira	0.6	1.2	–
	Banyarwanda	0.6	2.9	–
	Mutoro	1.8	1.2	–
Any difficulty	No	19.3	17.0	0.6
	Yes	21.1	40.4	1.8
Size of land accessed (acres)	<half acre	32.6	48.6	2.1
	1 acre	9.0	6.9	–
	>1acre	0.7	–	–
Source of income	Casual labor	36.0	46.0	2.1
	Broker for trade business	–	1.6	–
	Fish monger	–	1.1	–
	Small scale business	3.7	9.5	–
Household size	1 to 5	12.9	15.2	0.6
	5 to 10	23.4	36.3	1.8
	>10	4.1	5.8	–
Having a girl child	None	6.4	2.9	–
	No	2.9	2.9	–
	Yes	31.0	51.5	2.3
Household headship	Did not answer	Male	Female	Child headed
	2.9	63.2	32.2	1.8

PNS - Prefer Not to Answer; NAS-Not Attended School.
Source: Survey data

first and second author conducted a validation and dissemination exercise where they met leaders, and community members to inform focus groups and meetings. These engagements curated and validated the writing and results presented in this manuscript. The participants gave full consent and voluntarily participated in the interviews. Verbal consent was obtained from all participants to voluntarily participate in the study. For the face-to-face household survey, informed consent was obtained from household respondents. The respondents who voluntarily accepted to participate in the study continued with the interview process. We also informed the respondents of the purpose, risks, and benefits of the study. Further, consent to publish the study outcomes was obtained from all participants while maintaining confidentiality and anonymity.

2.4. Data analysis

For qualitative data, audio recordings of interviews and focus group discussions (FGDs) were transcribed, organized according to the research questions, and analyzed using content and thematic analysis. This approach allowed the identification of patterns, themes, and underlying meanings within the data, enabling the researchers to uncover key concepts, experiences, and perspectives shared by participants. Findings were presented narratively, with verbatim quotes included where relevant. Quantitative data were analyzed using SPSS version 23 to compute descriptive statistics and conduct one-sample t-tests, providing insights into the perceived impacts experienced by female climate migrants in the resettlement. Percentages and one-sample t-tests are well-established statistical methods for assessing whether observed responses align with expected patterns, facilitating comparisons to a known mean and enabling a nuanced understanding of variations in population perceptions (Shah, 2024). This statistical approach has been previously used in studies that focus on climate hazards and gendered adaptation such as Kisira et al. (2025) in similar contexts.

In this study, a 5-point Likert scale was used to assess respondents' agreement with the perceived impacts of resettlement, where 1 = Strongly Disagree (SD), 2 = Disagree (D), 3 = Somewhat Agree (SWHT), 4 = Agree (A), and 5 = Strongly Agree (SA). A test value of three (3), representing "Somewhat Agree," was used as the threshold for determining agreement or disagreement. Scores above the threshold revealed that respondents agreed to have faced a given impact providing a clear insight into their prevalence. The one-sample *t*-test analysis was conducted to determine whether the mean perception scores of respondents regarding the gendered social consequences of displacement significantly differed from the neutral/threshold reference value of 3. The null hypothesis stated that the average perception of each impact does not differ from neutrality, while the alternative hypothesis proposed that the mean perception was significantly different, indicating either stronger agreement or disagreement with the existence of the stated impact.

3. Results

In this section, we begin with a description of the respondents who constituted the sampled population, as depicted in Table 1. We present the results based on research themes and questions. The first section explores how climate induced resettlement has affected the lives of female settlers. The second section examines the coping strategies to the adverse impacts of climate-induced resettlement.

3.1. Profile of the respondents

Socio-demographic characteristics of the informants showed that 57.3 % of the women participated in the study compared to 40.4 % of the men. (see Table 1). All informants lived in Muhokya for 2 years at the time of conducting the first part of the study in 2023. The informants aged between 36 and 60 years were the most dominant (57.9 %), followed by those aged between 18 and 35 years (29.8 %), and those aged more than 60 years (10 %). In line with education, 48 % constituted the majority of those who had only primary education as their highest level of education. The majority (93 %) of the respondents were casual labourers, and a small number of respondents (14.6 %) dealt with small-scale businesses.

Most males (28.2 %) and females (27.6 %) were married, whereas separation was significantly more common among females (17.1 %) than among males (2.9 %). Divorce rates were also higher in females (5.3 %) than males (0.6 %). A small proportion of both sexes cohabited (males: 6.5 %, females: 5.3 %) or reported being unmarried (males: 2.4 %, females: 1.8 %). The Bakonjo tribe comprised most of the respondents, with females (42.7 %) surpassing males (28.1 %). Smaller percentages were recorded for other tribes, such as Baganda, Bakiga, and Mutoro, whereas Banyarwanda and Mufumbira were minimal.

Most female respondents reported facing difficulties in body functioning (disability) (40.4 %) compared to males (21.1 %), and fewer females (17.0 %) than males (19.3 %) reported facing no difficulties. Access to land was largely limited, with a higher percentage of females (48.6 %) than males (32.6 %) accessing less than half an acre, whereas access to one acre or more was minimal.

In terms of income sources, casual labour was the most common, with females (46.0 %) surpassing males (36.0 %). Females were also more likely to engage in small-scale business activities (9.5 %) than males (3.7 %), while other sources such as brokerage and fishing/fish mongering were minimally represented across both genders. Many households, both male and female, headed 5 to 10 members (23 % and 36 %, respectively). Households with more than 10 members accounted for 4 % of male-headed households and 6 % of female-headed households. Regarding the presence of a girl child, 31 % of male-headed and 51 % of female-headed households, making a total of 82 %, reported having female children, while a small percentage (2 %) of PNS households also indicated this. In terms of household headship, 63.2 % of households were male-headed, 32.2 % female-headed and 1.8 % child-headed.

Most households had one to five children, with 25.7 % of male respondents, 39.2 % of female respondents, and 1.2 % of PNS households falling into this category. Households with 5–10 children accounted for 11.7 % of male respondents, 18.1 % of female respondents, and 1.2 % of PNS households. Very few households had more than 10 children (0.6 % male), and none of the female or PNS respondents reported this. Additionally, 2.3 % of male respondents had no children, which was absent among female and PNS

households.

3.2. Impacts of climate hazard–induced forced relocation to the women

As shown in Fig. 4, majority of the responses (97 %) revealed that they engaged in forced migration and resettlement in Muhokya due to the demolition of homes by either floods or landslides. This implied that displacement due to demolition was the predominant reason for relocation among participants. In line with results on the impacts of relocation to the women climate migrants, the statistical results of a one-sample *t*-test assessing the impacts of climate migration are presented in Table 2. In general, gendered social consequences of climate-induced migration include disruption of girls' education, early pregnancies, increased domestic violence, engagement in multiple sexual partnerships, heightened exposure to HIV/AIDS, decline in conjugal rights among married women, and limited access to healthcare facilities. Majority of respondents agreed that resettlement led to the disruption of girl child education (70 %), early pregnancies (70 %), increased spread of diseases (67 %), and increased immorality through having multiple sexual partners (51 %).

3.2.1. Displaced by nature, dispossessed by policy

Prior to displacement, climate migrants owned houses, livestock, and individual parcels of land in the floodplains of Kanyangeya, Karusandara, and Maliba within Nyamwamba Division, Kasese Municipality. However, all the land, agricultural produce, and livestock on which they derived livelihoods were lost to floods and mudslides. The loss of land restructured family setup, economic bases, and livelihood patterns of the displaced local communities. Households that were virtually self-sufficient and subsisted from their agricultural fields were relegated to dependence on food handouts from individuals, non-governmental organizations, and the government. Yet even the food rations from the stakeholders were provided occasionally and not based on a specific schedule. To meet the food and dietary shortfalls of the households, some of the encamped migrants especially women offered labour to the landlords in the host communities that neighbour the Muhokya camp. In return, the migrants were paid either cash or in kind in terms of food. Women engaged in labour provision in order to fulfil their provision roles as dictated by culture. These intricate issues were aptly explained by the focus group discussion participants.

> Before the floods, I had my garden where I worked, and all I provided was mine and my family. I sold the surplus to the market for money and my life was good. Now, I dig for people in return for food and payments. The landlords in this community allocated me a piece of land measuring 15 × 30 feet to till for them. After tilling the land, I paid Ugx. 5000 [~1.5 USD] after a day's labour. These are the jobs I engage in for my survival (Interview, 2024).

3.2.2. Change in gender relations and domestic violence

Apart from the provision of labour on the agricultural fields of the relatively affluent landlords at the Mukokya town council in return for cash or in exchange for goods, some migrants were 'employed' as saleswomen and salesmen by the fishermen on the shores of Lake Albert on a short-term basis. For instance, Annette (fictitious name) explained that fishermen often gave their fish to hawk within and around the landing site. At the end of each working day, she was paid Ugx. 2000 (~ to 0.5 USD). Money was used to buy food and meet other household requirements. Meanwhile, Racheal hawks farms produce such as cabbage and green vegetables on the market day at the Mukokya town council. In return, she was paid between Ugx. 2000 (~0.5 USD) and Ugx. 3000 (~0.8 USD). Similar to Annette, Racheal used the money received from the hawking exercise to buy food and other household necessities.

The various activities that women engage in have transformed the traditional gender roles and responsibilities in the household and broader society. As indicated earlier in this paper, women in Uganda and other parts of Africa have traditionally not been engaged in paid labour outside of their homes. Most of them worked on the family land where they produced food for home consumption with the surplus provided to the market by the men (Nalwanga et al., 2025a,b). While men were the primary breadwinners for the household, women were recipients of the outputs from the men's labour provided outside of the home. However, the encampment of climate migrants has significantly changed this traditional socio-cultural pattern. While the loss of land and lack of employment opportunities within and around the camp has reduced the capacity of men to fulfil their socially ascribed roles and responsibilities in households, it

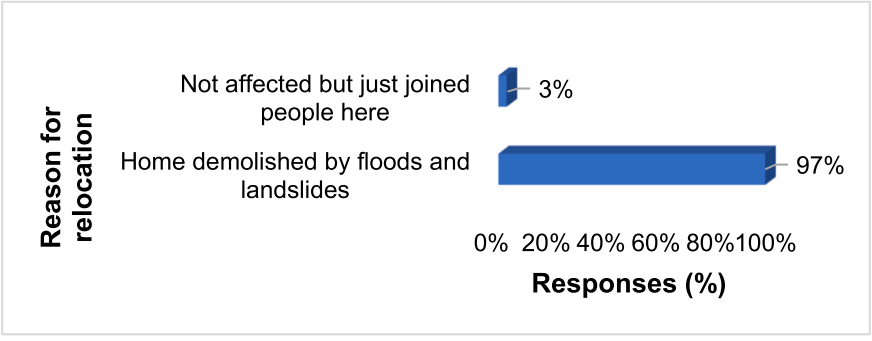

Fig. 4. Reasons for resettling in Muhokya camp. Almost all respondents relocated after losing their homes.
Source: Survey data

Table 2
Impacts of climate migration on women and girls in settlement camp.

Gendered social consequences	Percentage responses (%)					One sample statistic (test value 3)			One sample T-test					
									t	df	Sig. (2-tailed)	Mean Difference	95 % Confidence Interval of the Difference	
	1	2	3	4	5	Mean	Std. Deviation	Std. Error Mean					Lower	Upper
Disruption of girls' child education		23	7	**70**		3.8	1.409	0.108	7.0	170	0.000	0.75	0.542	0.967
Early Pregnancies among girls		12	18	**70**		4.0	1.103	0.084	11.9	170	0.000	1.01	0.839	1.172
Domestic violence and gender roles		26	27	**47**		3.3	1.192	0.091	3.0	170	0.004	0.27	0.089	0.449
Multiple partners among women		22	27	**51**		3.4	1.178	0.090	4.1	170	0.000	0.37	0.191	0.546
Risk of HIV AIDs		14	19	**67**		3.8	1.130	0.086	8.8	170	0.000	0.76	0.590	0.931
A decline in conjugal rights among the married		21	31	**48**		3.3	1.094	0.084	3.4	169	0.001	0.28	0.117	0.448
Inaccessible Health facilities		36	23	**41**		3.1	1.308	0.100	1.1	170	0.268	0.11	−0.086	0.309

Note: 1-Strongly disagree; 2-Disagree; 3-Somewhat Agree; 4-Agree and 5 – Strongly agree; t statistic = the number of standard errors by which the sample mean differs from the known population mean; df = degree of freedom; Test value = Assumed mean (population mean) below which the respondents did not agree with the implication.
Source: Survey data

at the same time increased the burden on women. We established that some migrant women laboured in the host communities in return for food (although the opportunity to do so was not readily available). There was stiff competition for the available limited job opportunities. The competition significantly reduced cash and in-kind payments.

In addition, cases of domestic violence were widely reported in the Muhokya resettlement camp. The statistical results from the one-sample *t*-test revealed that the respondents agreed with a mean score of 3.3, a result that was significantly higher than the test value of 3, t(df = 170) = 3.4, P-v = 0.001. This outcome implies that the respondents indeed acknowledged the prevalence of domestic violence with a 47 %tage score. Domestic violence was attributed to high poverty levels in the camp. The women demanded, what the informants described as key items such as food, shelter, and clothes, from men who were often unable to provide. The outcome of incapacity to provide was violence in the form of fistfights. Second, extramarital relationships were also prevalent in the camp. These issues are vividly pointed out in the excerpt below:

Domestic violence is high in these settlements. This is brought about by poverty, which is too high in the settlement. Some women may want to eat meat on Easter Sundays. However, most men do not have money to buy meat. If a woman demands meat in the absence of money, the outcome is domestic violence. Other women demanded new dresses during Christmas. In our old homes, we often bought these invaluable items. However, we cannot afford this anymore. Thus, when a woman demands a new dress and the man does not have money, domestic violence is the result. In addition, some men get other women at Muhokya, who give them food. This is a source of domestic violence at home (Focus group discussion for men, 2024).

The limited employment opportunities for men in their midst and the increased demand from households compelled some women and girls to search for alternative survival mechanisms. We established that some women and girls engaged in transactional sex with fisher men in return for fish to meet the food and dietary demands of the household, a process that the informants described as 'sex for fish.' In an interview, a woman explained why 'sex for fish' was prevalent in the Muhokya camp.

My husband does not provide me with all of the requirements of a woman. I have to look for a man who gives me all I need. I get a man who can give me fish to solve my hunger problems. The man often wants to beat me because of this. (Focus group discussion for women, 2024).

3.2.3. Walking many paths of intimacy

In Table 2, most of the responses (51 %) agreed that women had been forced into multiple sexual partners dubbed as 'walking many paths of intimacy', with a mean score of 3.4, t(df = 170) = 4.1, P-v = 0.000. Extramarital relationships and sex work were commonplace in Muhokya camps in the Kasese district. Women and young girls engaged in sex work with truck drivers and other people along the Kasese-Bwera route, which connects Uganda to the Democratic Republic of Congo (DRC). The majority (51 %) of respondents were worried about the risk of HIV/AIDS transmission at Muhokya camp due to the increased prevalence of sex in exchange for cash or food with both people from outside and within the camp. During the focus group discussion for men, informants explained the cause of the high prevalence of HIV/AIDS in the settlement.

Our women have sexual relations with fisher men because they want food that is lacking in our homes. This is the reason for the high rate of HIV/AIDS in the camps. The medical team from the Ministry of Health visited the camp and underwent HIV/AIDS tests.

They found that some of us were HIV positive, yet we came to the camp when we were not sick [did not have HIV/AIDS]. I think it is because of the woman who goes out of the camp and sleeps with the men. The government brought us close to Lake [Lake George] in that when fisher men come fishing, they come to our trading centre of Muhokya. They lure our wives with fish and then end up making love with them. (Focus group discussion for men, 2024).

3.2.4. *'Dreams deferred': when motherhood interrupted the classroom*

We established that the early pregnancy rates increased as reported by 70 % in the Muhokya camp, as shown in Table 2. With a mean score of 4, the difference was statistically significant, $t(170) = 11.9$, $p < .001$ revealing that respondents highly agreed with the experience of early pregnancies as a prevalent challenge in the camp. In this context, there was accelerated school dropout among girls, as revealed by a 70 % response rate with a mean score of 3.8; t(df = 170) = 7, P-v = 0.000. Covertly, the respondents agreed that school dropout was a major consequence of early pregnancies. In addition, the majority claimed that camp conditions characterized by high rates of unemployment have made it difficult for men to fulfil their provision roles and responsibilities, such as payment of tuition/school fees and provision of scholastic materials. High school dropout rates have, in turn, resulted in teenage pregnancies and early marriages.

Our young girls were married at the camp. This was not the case before the floods or before coming to the settlement. Our children drop out of school at a very early age, mostly at the primary school level. We do not have the money to pay school fees or provide other requirements. Our children are expected to be in secondary school. However, because of their lack of financial capacity, they are out of school. We do not have the money to take them to school, because schools are now expensive. Many of our children are pregnant, and some have children because we do not have the money to pay school fees. Our girls are forced to engage in early sexual relationships in need of survival, leading to unintended pregnancies and failure to resume school (Focus group discussion for women, 2024).

Furthermore, participants in a mixed focus group discussion revealed that:

We do not have money to meet these demands. My girls ask for Vaseline, and when I tell them that I do not have money and advise them to use 'Kabili' [cooking oil], they will tell you that they cannot use it. However, for us we grew up using 'Kabili.' However, her as a girl child who has become sharp and often sees other things on social media and starts admiring such things and in fact that's what brings us problems [makes them get older men and hence, elope and get pregnant.

These findings reject the null hypothesis for six of the seven measured impacts, confirming that female climate migrants in Muhokya Settlement experience significant and multifaceted social consequences of climate-induced displacement. The statistically significant mean differences demonstrate that the gendered effects especially on education, reproductive health, and family stability are not random but represent systematic patterns of vulnerability and inequality reinforced by displacement contexts. In line with the theory, the results point to the role of social and cultural norms in shaping the unequal distribution of risks and coping capacities between men and women in disaster contexts. Women's caregiving roles during unfavourable climate and limited control over productive resources amplify their exposure to post-disaster hardships. From a social constructionist perspective, the persistence of gendered roles and patriarchal power relations within the camp reinforces unequal access to opportunities and decision-making power, making women's suffering both a product and a perpetuation of structural inequalities.

3.3. *Coping strategies by women climate migrants*

Migrant women deployed several adaptation strategies to the precarious life and conditions in the Muhokya resettlement camp (see results presented in Fig. 5). The responses revealed that 61 % of women migrants engaged in casual labour, 49 % relied on aid provided by the state and humanitarian organizations, and 21 % depended on relatively small loans from financial institutions. Interestingly, 25 % of the women indicated that they relied on multiple sex partners, which indirectly showed that extramarital relations were a key coping strategy that was central to the lives of some women migrants. However, most women were compelled to engage in the multiple and diverse resilience strategies outlined above due to household subsistence pressures but not out of their own free will. Many took on

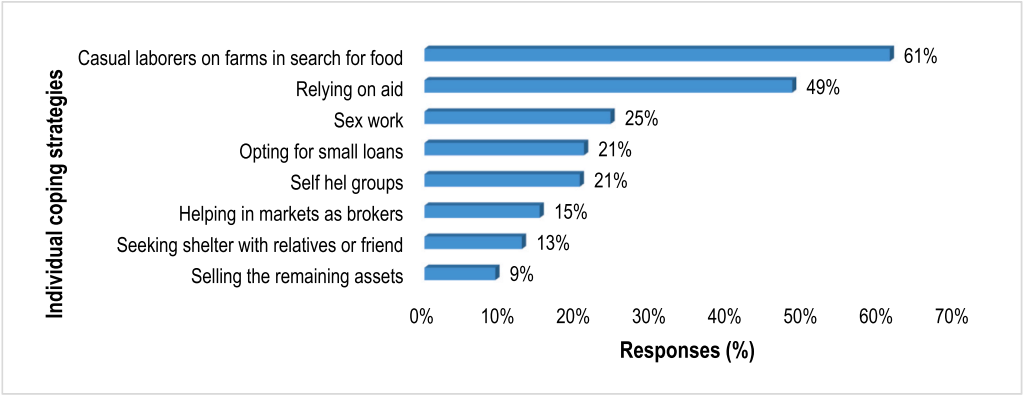

Fig. 5. Coping strategies atrocities due to climate forced migration.

the strategies in order to secure the household livelihoods and in fulfilment of their provision roles and responsibilities. For example, cash payment and outcomes from multiple sex partners were used to purchase food for the household.

3.3.1. State withdrawal and reliance on aid

Climate migrants have been significantly affected by both overt and covert withdrawals of state support (see Fig. 7), with responsibility for their welfare increasingly shifted to community-based organizations (CBOs), non-governmental organizations (NGOs), well-wishers, and private individuals. While the state initially provided short-term relief following the River Nyamwamba flooding, it has since failed to establish long-term resettlement or redevelopment frameworks for displaced communities at the Muhokya Camp.

Even local organizations willing to offer assistance have faced significant barriers. Many CBOs and NGOs became entangled in political dynamics and land ownership disputes that hindered their efforts. The state, rather than facilitating aid, instituted layers of bureaucracy and control through designated gatekeepers who often questioned or blocked external actors seeking to support the migrants. For example, all CBOs, NGOs, and even researchers were required to obtain prior clearance from the Office of the Prime Minister before delivering aid or conducting fieldwork. This institutional obstruction not only limits support for displaced populations but also reflects a broader pattern of state disengagement in the face of climate-induced displacement.

Climate migrants reported to have been excluded from accessing government development initiatives such as the Parish Development Model (PDM). Under the PDM, the central government allocates funds to each parish, allowing residents to access financial resources for social and economic development, which are later refunded after a set period. However, migrants at Muhokya were denied access to this support. A respondent noted, *"The government has not allowed us to benefit from PDM* funds. *They say we are not permanent residents of Muhokya Town Council and could be relocated at any time"* (Interview, 2023). Similarly, the women's leader of the camp explained, *"We were excluded because we have no land where we can invest the money"* (Interview, 2024). Two key reasons were cited for their exclusion: first, the lack of secure land ownership, which made it difficult to justify economic investment; and second, their classification as temporary residents, which raised concerns about follow-up and fund recovery should they be relocated. However, this reasoning is problematic. Even if resettled, these migrants would remain within Uganda's borders, and tracking for loan recovery could still be possible through national systems. Denying PDM support to climate migrants not only hampers their ability to rebuild lives and livelihoods lost to floods but also signals a deeper issue—the erosion of their citizenship rights in the face of climate-induced displacement.

The migrants have struggled to rebuild their lives due to overlapping and competing land claims between Muhokya Town Council and Kasese Municipal Council. "We are not allowed to construct permanent houses or grow perennial crops like bananas, coffee, and cocoa, which could help us earn income and recover," a respondent explained (Interview, 2024). Muhokya Town Council officials argued that allowing migrants to establish permanent homes and plant long-term crops could be interpreted as relinquishing land ownership to them. They maintain that the migrants were displaced from Kasese Municipality and only temporarily resettled in Muhokya, a separate administrative unit. However, both councils fall under the jurisdiction of Kasese District. According to locals, their only viable option has been to purchase food and essential items while trying to rebuild. As one key informant put it: "For a start, families affected by the floods and landslides can purchase food and non-food items, giving them a much-needed boost as they rebuild their lives" (Key Informant, 2024).

3.3.2. Trading sweat for starch in form of casual labour

Information from interviews and focus group discussions revealed that the highest number of local communities, including both men and women, depended on the provision of casual labour (Fig. 5). Many migrants work in the agricultural fields of the relatively affluent landowners at the Mukokya town council in return for cash or in-kind payments. Displaced by floods, many migrants survived by trading sweat for starch offering labour in exchange for cassava, maize flour, and plantains. Others work as saleswomen and salesmen by fishermen on the shores of Lake Albert on a short-term basis. Peter (pseudo name) explained how his family survived

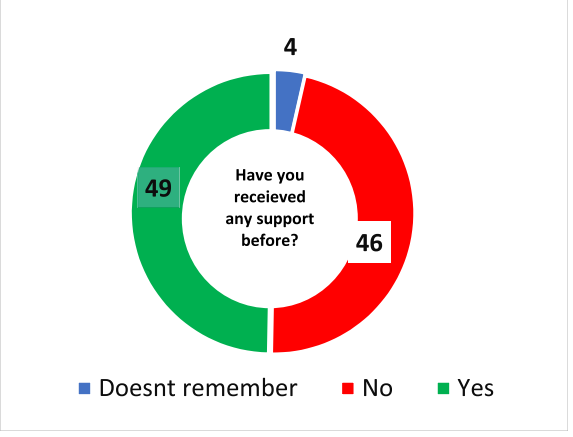

Fig. 6. Response (%) to support from government and non-government agencies.

labouring on farms owned by a member of the local community. His wife also ventured out of home, especially at Lake George and Edward, which were visible at the camp. She often came home with fish and any other foodstuff that was given after either hawking dry fish or roasting fresh fish for the fisher men and affluent women fish traders. These issues are aptly captured in the excerpt below:

I survive by working on people's farms so I can put food on the table. This is the only way that children can get what to eat. Another option is for my wife to often look for what to do. If she gets fish, then we eat that. (Male participant, 2024).

3.3.3. Sex work

The widespread view among the local communities was that the men in the host communities were taking advantage of the precarious situation in which the climate migrants found themselves to lure girls and women migrants into extramarital relationships, sex work, and exchange of 'sex for fish' (25 %) (see Fig. 5). While married women often made love with fishmongers, young girls engaged in sex work with truck drivers and other people along the Kasese-Bwera route which connects Uganda to the Democratic Republic of Congo (DRC) see Fig. 6 and 7. As explained in the excerpt below, parents of the girls who engaged in these activities claimed that they were traumatized by knowing that their daughters were being used as sexual objects.

Our young children, mostly girls, are getting indulged in sexual relations with men in the camp and out of the camp. They do this to get money to support themselves and their families with food and other basic items. The pain of seeing your child being used as a sexual object other than being in school has increased trauma among people (Focus group discussion for women, 2024).

Climate migrants attributed the increased prevalence of HIV/AIDS at Muhokya camp to sex in the first scenario and commercial sex work. The reasons for the surge in HIV/AIDS cases were explained in an interview with a key informant.

Our women have sexual relations with fisher men because they want food that is lacking in our homes. This is the reason for the high rate of HIV/AIDS in the camps. The medical team from the Ministry of Health visited the camp and underwent HIV/AIDS tests. They found that some of us were HIV positive, yet we came to the camp when we were not sick did not have HIV/AIDS. I think it is because of the woman who goes out of the camp and sleeps with the men. The government brought us close to Lake George in that when fishermen come with fish to our trading centre of Muhokya, they lure our wives with fish and then end up making love with them (Interview, 2024).

4. Discussion

Climate change and its related hazards have significantly reshaped settlement patterns and the socio-economic and livelihood foundations of migrant communities. Communities displaced by climate-induced hazards, who previously subsisted on their own land, have become landless and reliant on informal settlement structures. Floods and mudslides abruptly disrupted housing, agricultural fields, and livelihood systems, creating widespread vulnerabilities. However, the effects of these hazards were not uniform across social and economic categories; women continue to bear the heaviest burden of environmental shocks thus the need to centralise gender equality in climate action (Deininger et al., 2023)The resulting forced migration and its challenges point to the fact that disasters related to natural hazards are not gender neutral (Nalwanga et al., 2025a,b). In the Muhokya resettlement camp, women and girls have been affected in multiple, interconnected ways. High school dropout rates among girls, driven by lack of tuition and scholastic materials, have led to early marriages and premature entry into the labour market as also reported by Asare and Forkuor,

Fig. 7. An arial view of Muhokya settlement boardered by Lake George in the north-eastern providing fishing grounds to the local community. In the middle ground, the Bwezi-bwera highway presents opportunity of the truck drivers who offer money in exchange for sex with the marginalized migrants. The two identified features are a source of men who propel the sex for fish economy.

(2024) in Ghana. Adult women face ongoing sexual and gender-based violence and experience barriers in accessing sexual and reproductive health services. Survival strategies such as transactional sex, including "sex for fish" and sex work, have emerged as coping mechanisms for both women and girls, reflecting broader patterns reported in other contexts (Rosati et al., 2024). The loss of farmland previously a primary source of livelihood combined with patriarchal control over assets, spending, and decision-making during the climate crisis has further exacerbated vulnerabilities among women (Nalwanga et al., 2025a,b). While the encampment structure appears to have intensified social challenges, including the prevalence of multiple sexual partnerships and associated health risks, these findings align with Reid (2014), highlighting the nexus between climate, migration, and social disruption.

The study also demonstrates the importance of informal support networks in sustaining livelihoods. Casual labour remains the most prevalent livelihood strategy, while women's membership in self-help groups provides critical support systems for collaboration, resource sharing, and social resilience. Limited access to land constrains opportunities for sustainable livelihoods, although small-scale farming by those with temporary access contributes to household food security and income. Nonetheless, reliance on casual labour and short-term coping mechanisms underscores the broader economic vulnerability of the community and reinforces the need for long-term, sustainable livelihood solutions (John, 2022). Both men and women engage in transactional sexual relationships as coping strategies, reflecting the complex interplay between economic survival, household pressures, and societal expectations. While small loans provide short-term financial relief and attempts at economic independence, they also highlight the lack of secure, long-term income opportunities, further perpetuating cycles of dependency and vulnerability.

From a theoretical perspective, the findings resonate with social construction theory, which posits that socially constructed gender roles and responsibilities compel women and men to engage in diverse (often opposite) coping and adaptation activities. The activities, which are aimed at rhyming with the 'dictates of culture' reproduce more adverse and intricate vulnerabilities as opposed to reducing it as seen in our study where women engage in sex work and 'sex for fish' in addition to having multiple sex partners. Women's coping strategies and experiences at the Muhokya camp were shaped by dominant gender norms, cultural expectations, and power hierarchies within both the displaced and host communities. This study contributes to theoretical debates on women and climate change, and discourses on climate justice by illustrating how structural inequalities are reproduced in post-displacement contexts and how social constructions of gender influence access to resources, decision-making, and resilience-building.

The findings highlight the critical role of state intervention and Uganda's resettlement program in addressing the vulnerabilities of climate migrants. While the recent National Migration Policy published by Ministry of Internal Affairs, (2025) seeks to strengthen government capacity to manage climate-related migration partly through research and data gathering, mainstream climate mobility into national development plans, and harmonize relevant laws, it does not address the severe gendered vulnerabilities revealed among the women climate migrants in climate-hazard affected areas such as the Rwenzori region in Uganda. It remains largely gender-blind across its three core objectives and yet findings showed that women dominate the affected people, are forcibly displaced by floods and subsequently face increased school dropout rates among girls, early marriages, transactional sex, and rising gender-based violence. These harms demonstrate that climate-migration governance cannot be effective without integrating gender-responsive protection, livelihood support, and healthcare considerations. Amidst this crisis, government's initiatives, including the Parish Development Model (PDM) and other livelihood support programs, provide essential assistance, however, gaps remain in addressing gender-specific vulnerabilities, such as access to land, secure income sources, education, and sexual and reproductive health services. Strengthening these programs to mainstream migrant women in livelihood planning and decision-making can transform them from passive aid recipients to active co-creators of socially just, sustainable resettlement outcomes. Consequently, aligning Uganda's climate adaptation and disaster management strategies with frameworks such as the United Nations Framework Convention on Climate Change (UNFCCC) Gender Action Plan (GAP) and the Sendai Framework (Priority 4) can enhance disaster preparedness, recovery, and livelihood restoration while promoting gender equity.

Therefore, sustainable coping strategies must target social networks, access to socio-economic assets, and alternative livelihoods, rather than focusing solely on the scarce land resources. Empowering women through self-help groups through financial support, reduced requirements to access livelihood programs such as PDM, entrepreneurial schemes, and inclusive policy reforms can provide durable solutions, reduce dependency, and strengthen resilience. Further research tracking migrants' livelihoods pre- and post-resettlement would provide valuable insights into asset loss, income recovery, and economic reintegration, thereby informing more effective climate-resilient resettlement programs.

5. Conclusion and implication to development

Women and girls are the most affected by the climate hazard related relocation which continue to occur in mountainous rural landscapes. Women at the Muhokya camp, who are the primary caretakers of the households due to the dictates of culture and tradition, have been compelled to take on unsustainable strategies to meet the household's basic needs especially feeding. The transactional sex has however translated into sexual and gender-based violence. For some young girls, the hardship in the camp has compelled many to drop out of school, others gotten pregnant, consequently leading to young motherhood. These complex issues point to the need to protect and provide basic and other needs, such as food, shelter, education, legal services, and healthcare to climate-induced forced migrants. If sustainable development goals are to be meaningful to everyone so that no one is left behind, then it is key for countries to provide and protect their most vulnerable citizens not only during relocation but also after relocation. Moreover, leveraging the existing government livelihood programs such as the Parish Development Model, the government of Ugandan should strengthen its support systems and create sustainable, empowering opportunities for women in Muhokya camp through policy reforms to mainstream livelihood programs for the resettled.

Policies that dismantle gendered hierarchies and foster women's agency in shaping their resettlement and livelihood pathways

where women are not passive recipients of aid but co-creators of sustainable, socially just responses to climate-induced displacement are urgent. To align with the UNFCCC Gender Action Plan (GAP), Uganda's climate adaptation and disaster management frameworks ought to intentionally mainstream gender at all levels of decision-making. This study's findings, which highlight women's readiness in self-help groups and informal livelihood systems, demonstrate the potential for operationalizing GAP priorities through community-driven, gender-responsive resettlement programming. Uganda's climate governance can be strengthened by adopting Sendai's Priority 4 enhancing disaster preparedness for effective response and "building back better" in recovery, rehabilitation, and reconstruction through gender-sensitive livelihood restoration programs, access to sexual and reproductive health services, and robust GBV protection systems within resettlement camps. Further research tracking migrants' livelihoods pre-and post-resettlement can provide valuable insights into livelihood transitions, enabling assessment of asset loss, income recovery, and economic reintegration within post-disaster recovery frameworks.

CRediT authorship contribution statement

Eria Serwajja: Writing – review & editing, Writing – original draft, Visualization, Validation, Supervision, Software, Resources, Project administration, Methodology, Investigation, Funding acquisition, Formal analysis, Data curation, Conceptualization. **Yeeko Kisira:** Writing – review & editing, Writing – original draft, Visualization, Validation, Supervision, Software, Resources, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **F.S. Nalwanga:** Writing – review & editing, Writing – original draft, Visualization, Investigation. **Priscilla Mwondha:** Writing – review & editing, Writing – original draft, Visualization, Validation, Investigation. **Herman Muhindo:** Writing – original draft, Visualization, Resources, Methodology. **Charlotte Nakakaawa Jjunju:** Writing – review & editing, Validation, Funding acquisition.

Notes

The phrase 'sex for fish' was used by women migrants during the interviews and focus group discussions at the Muhokya camp for climate migrants. The phrase meant "having sex in exchange of fish or any food item between the women climate migrants and fishers' men' in the settlement.

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Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Data availability

Data will be made available on request.

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