

Adaptive Planning and Girls' School Retention during Climate Disruptions in Rural Malawi

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ABSTRACT

Climate disruptions are increasingly affecting retention of girls in secondary schools in rural Malawi, a country highly vulnerable to extreme weather events. However, empirical evidence on how adaptive planning and feedback mechanisms by Non-Governmental Organizations (NGOs) support girls' retention during climate shocks remains limited. This study employed a qualitative multi-case study approach, guided by three objectives: (1) to identify the main climate-related disruptions affecting female students; (2) to describe how NGOs implement adaptive planning and feedback mechanisms in supporting female student retention; and (3) to explore stakeholder perceptions of how these mechanisms support girls' retention. Four Community Day Secondary Schools (CDSSs) in rural Phalombe District were purposively selected. Data were collected through semi-structured interviews (n=54) and focus group discussions (n=100) targeting female students, teachers, Parent-Teacher Associations (PTA) members, mother groups, NGO staff, and community leaders. Thematic analysis was conducted using NVivo 15. Findings show that repeated flooding and cyclones disrupted learning through infrastructure damage, prolonged school closure, displacement, and food insecurity. These disruptions increased gendered vulnerabilities including increased domestic burdens, early marriage, transactional sex, sanitation challenges and safety risks for girls. Adaptive planning was predominantly reactive and non-gender-sensitive, with no school having a disaster preparedness plan. Feedback systems failed to meaningfully engage girls in decision-making processes, as parents, teachers, and community leaders dominated consultations. As a result, the current mechanisms inadequately supported retention, with selective NGO support exacerbating inequalities. Therefore, the study recommends that NGOs and donors strengthen inclusive engagement, adopt proactive gender-sensitive adaptive planning, and establish formal coordination mechanisms among schools, district education offices and NGOs to sustain girls' education during escalating climate disruptions.

Keywords: Climate change, adaptive planning, female student retention, feedback mechanisms, education.

INTRODUCTION

Climate change has become a significant challenge affecting delivery of basic services, particularly education in low-income regions, especially sub-Saharan Africa (Codjoe & Atiglo, 2020). Extreme weather conditions such as droughts and cyclones are increasingly disrupting learning, damaging infrastructure, and destroying livelihoods, thereby increasing household economic stress (Pankhurst, 2022). Climate change impacts on education are not gender-neutral. Empirical studies show that climate-related shocks interact with existing gender inequalities, disproportionately affecting girls' access to and retention in schools (Kwauk et al., 2019; Sims, 2021). In many rural parts of Africa, girls are responsible for domestic work, which includes childcare and fetching water (Kamwendo et al., 2025). Moreover, the economic hardships induced by climate-related challenges compel families to resort to harmful coping mechanisms disadvantageous to girls, such as marrying off girls or withdrawing them from school to support survival of household (Ahmed et al., 2025).

Malawi illustrates the intersection between climate vulnerability and educational disparity. The country often experiences floods, droughts, and tropical cyclones, especially in its Southern part, where cyclones are recurrent (Šakić Trogrlić et al., 2022). These disasters damage school infrastructure and learning materials, displace

communities, and sometimes result in prolonged school closures (World Bank, 2024; Jing et al., 2025). Phalombe district in southern Malawi ranks among the districts in Malawi that are most vulnerable to climate change effects and economic hardship (NSO, 2020a; GoM, 2012; Khendlo & Beeharry, 2025). Climate shocks such as flooding and tropical cyclones have caused damage to classrooms, displacement of families, destruction of learning tools, and disruption of school calendar (Gandidzanwa & Togo, 2021). Furthermore, erratic rainfall and drought periods lead to water shortages, forcing girls to walk three to five hours every day to fetch water (Kamwendo et al., 2025). During disasters, the increase in childcare responsibilities and livelihood duties among girls limits girls' school attendance (Munthali, 2004). Additionally, the destruction of WASH facilities and girls' changing rooms worsen the situation for girls as about one-third of adolescent girls are out of school during their menstrual periods (Grant et al., 2013; Pankhurst, 2022).

Non-Governmental Organizations (NGOs) play a critical role in supporting girls' secondary education in Phalombe by offering bursaries, mentorship, household support, and safe school programs (World Bank, 2024). However, previous studies have shown that NGO projects rely on strict and rigid plans that do not accommodate adaptation during climatic uncertainties (Chanika et al., 2019). The concept of adaptive management, which involves learning, flexibility, and adaptation, has been considered a key strategy for dealing with uncertainty in development initiatives (Arora et al., 2019; Parsons et al., 2025). Likewise, stakeholder theory has advocated for inclusive engagement and feedback mechanisms as essential elements in designing interventions (Freeman, 1984; Peng et al., 2024). Although these theories are promising and relevant to development, very few empirical data are available from Malawi on how adaptive planning and feedback mechanisms operate in practice to support female student retention during climate disruptions.

Therefore, this study aimed to explore how adaptive planning and feedback mechanisms in NGO-led education projects support retention of female students in secondary schools during climate-related disruptions in rural Phalombe, Malawi. Specifically, the study aimed to: (1) identify the main climate-related disruptions affecting female students in secondary schools in rural Phalombe; (2) describe how NGOs implement adaptive planning and feedback mechanisms to support female student retention; (3) explore the perceptions of NGO staff, school staff, female students, guardians, PTA members, mother groups and local leaders regarding how adaptive planning and feedback mechanisms support female student retention during climate-related disruptions.

METHODOLOGY

Research Design and Approach

This study used a qualitative dominant multiple case study research design (Yin, 2018) with four CDSSs in Phalombe District being treated as individual cases. The case study design was appropriate for examining complex social processes, interrelationships among stakeholders, and contextual factors whose meanings are difficult to quantify (Creswell & Poth, 2018). The multiple-case design facilitated cross-case comparison, which enabled identification of patterns while preserving contextual richness. The interpretivist paradigm was used in the study since climate disruption, adaptive planning, and retention issues are viewed differently by different stakeholders due to their social identities and gender roles.

Study Area and Context

This study was carried out in four CDSSs in rural Phalombe district, Southern Malawi. Phalombe is highly prone to climate-related shocks such as floods, droughts, and tropical storms due to its proximity to Lake Chirwa and Mulanje Mountain. Some of the recent climate shocks that affected the district include tropical cyclone Freddy (2023), tropical cyclone Chido (2024), and tropical cyclone Jude (2025). The four selected CDSSs included Mpasas, Likani, Nkhulambe, and Nkhongoloni.

Population and Sampling Strategy

The target population comprised of stakeholders affected by or involved in responding to climate disruptions. These included female secondary school students (Form 3 & Form 4), teachers, PTA members, mother groups, NGO employees, and community leaders. According to District Education Management Information System data (2024/2025), total school enrolment in these four schools stood at 1,582 learners (763 girls, 819 boys).

Stratified purposive sampling was used, first grouping the respondents by their stakeholder classification, then purposively selecting respondents to maximize information power (Patton, 2015; Malterud et al., 2016). Sampling was done until thematic saturation was attained (Guest, Bunce, & Johnson, 2006). In total, 154 respondents participated in the study: 80 female secondary school students from eight focus groups, 40 female secondary school students individually, 7 teachers, 4 PTA members, 3 NGO employees, and 20 mother groups in four focus groups.

Data Collection Methods and Tools

Three complementary techniques were used to collect data. First, semi-structured interviews were conducted with NGO staff, teachers, head teachers, PTAs members, and female students. Individual interviews with female students covered sensitive issues that could not be shared during group discussions, for instance dropout risks and early marriages. Interviews lasted between 30 to 60 minutes, with 54 individual interviews being completed. Focus group discussions (FGD) involved female students and mother groups, each comprising eight FGDs (n = 80) and four FGDs (n = 20), respectively. FGDs with females were facilitated by women in private space to create a safe space. Document review supplemented primary sources, whereby EMIS data, school registries, and reports from NGOs were analyzed using a checklist.

Data Analysis

The thematic analysis was carried out following the guidelines of six phases proposed by Braun and Clarke (2006). The initial phase involved familiarization through transcribing the data and reading it repeatedly. The coding method employed was iterative and included both deductive coding based on research questions (i.e., adaptive planning, feedback channels, retention results) and inductive coding that arose from the data itself. Theme formulation was based on research questions while sub-themes reflected differences among stakeholders and schools. Thematic analysis was conducted using NVivo 15. Findings from interviews, FGDs, and document review were triangulated to enhance credibility.

Trustworthiness and Ethical Considerations

Trustworthiness of this research followed standards by Lincoln and Guba (1985). Credibility was achieved through triangulation of methods and verbatim quotations. Dependability was ensured by maintaining an audit trail, including data, codes, and decision logs. Peer reviewed journals were used to confirm the researcher's standpoint in the study. The transferability issue was addressed by using rich descriptions of the context and participants. An ethical approval was obtained from the University of Malawi Research Ethics Committee (UNIMAREC). All adult respondents gave their consent to participate in the study. In the case of girls under 18 years, consent from parents and assent from adolescents were collected. Confidentiality and anonymity of all the data were ensured through coding and storage on encrypted hard drives. Participation was voluntary, and leaving the study did not lead to any adverse consequences.

RESULTS

Climate-Related Disruptions and School Disruption Pathways

Floods emerged as the most mentioned climate hazard referenced 142 times across 66 transcripts, followed by cyclones (76 references) and droughts (38 references). Girls contributed most references across all hazard categories (110 of 142 flood references, 58 of 76 cyclone references). A teacher from Nkhongoloni CDSS stated: *"Flash floods have been occurring almost every year here since it is an area close to the lake. This has been the cause of class disruptions, increased absenteeism and increased dropout rate"* (Teacher/Admin1-NKhongoloni). A PTA member confirmed: *"Cyclone Freddy caused severe flooding in our area"* (PTA1-MpasaCDSS). Droughts were mentioned as a secondary risk exacerbating the problem, as mentioned by a teacher, *"The cyclone was followed by a drought spell in 2024 leading to hunger and other related problems"* (Teacher/Admin7-Nkhulambe).

Table 1. Thematic ranking of climate hazards

Rank	Climate Hazard	Total References	Transcripts Affected	Stakeholder Groups
1	Floods	142	66	Girls (110), Mother Groups (12), PTA (12), Teachers (8)
2	Cyclones	76	52	Girls (58), Mother Groups (8), PTA (6), Teachers (4)
3	Droughts	38	33	Girls (26), Mother Groups (6), PTA (4), Teachers (2)

Table 1 shows the ranking of climate hazards based on frequency of references by all stakeholders. The ranking reveals that floods ranked highly compared to the other two hazards, with cyclones being second and droughts being the least frequently cited.

Impacts of natural disasters on schools involved closure (112 references), infrastructure damage (92 references), use of schools as camps (46 references), and interrupted calendars (38 references). One girl from Mpasa CDSS commented: *"The school had to close for some weeks because classrooms were full of mud and toilets were damaged"* (Girl01-MpasaCDSS). After Cyclone Freddy, a member of PTA said: *"The school was turned into a camp for displaced families"* (PTA1-MpasaCDSS). A teacher from Likani CDSS added, *"The school was closed for over a month. Many students left the school because they had nothing at home since all their properties were washed away"* (Teacher/Admin3-Likani). Damage to infrastructure affected classrooms, toilets, changing rooms, and learning materials across all four schools. The impact of the floods at household level included migration and displacement (70 references), food shortages (58 references); and loss of income (46 references). A girl from Mpasa CDSS explained: *"I lost my home and my family migrated to a temporary camp shelter"* (Girl03-MpasaCDSS). Another stated: *"Food was lost too and my family could only depend on well-wishers' handouts for us to eat"* (Girl04-MpasaCDSS). A PTA member noted: *"There was also a drought after the floods, which caused hunger"* (PTA2-LikaniCDSS). As for the loss of income, one girl from Likani CDSS commented: *"Our parents lost income because crops were destroyed"* (Girl12-LikaniCDSS). Attendance disruptions (72 references) and learning interruptions (92 references) were reported as direct consequences. A teacher from Nkhulambe CDSS stated: *"Many students were displaced due to destruction of their houses. Many students experienced psychological distress, affecting their concentration in class"* (Teacher/Admin4-NkhulambeCDSS).

Gendered Vulnerabilities and Unequal Educational Impacts

Table 2. Thematic ranking of gendered vulnerabilities

Rank	Theme	Total References	Transcripts Affected
1	Early Marriage	84	54
1	Increased Household Chores	84	52
3	Sanitation and Hygiene Challenges	74	48
4	Feeling Unsafe	70	48
5	School Dropout	64	47
6	Safety Risks	62	46
6	Emotional Stress	62	46

Table 2 shows the thematic ranking of gendered vulnerabilities. The ranking indicates that early marriage and increased household chores were the most frequently cited impacts, followed by sanitation and hygiene challenges, feeling unsafe, safety risks, emotional stress, and school dropout.

Increased household chores and early marriages were the most cited gendered vulnerabilities; each referenced 84 times. In total, girls provided 66 out of 84 references of increased household chores and 64 out of 84 references of early marriages. A girl from Mpasa CDSS stated, *"My household responsibilities increased*

because my family depend more on me to help at home. I had to spend more time doing chores such as fetching water from longer distances, collecting firewood and cooking" (Girl01-MpasaCDSS). In another focus- group discussion, a participant highlighted, "Household chores increased as we were left by parents to do all domestic work such as caring for siblings, cooking, fetching water, while they went out to receive relief items" (Girl11-FGD-Nkhulambe). Early marriage came as one of the negative adaptive measures driven by food shortage and the associated economic hardships. A FGD participant from Likanani CDSS revealed; "Some families marry off their daughters during hard times to reduce the burden at home" (Girl5-FGD-Likanani). Another girl stated: "Lack of food influenced early marriages as parents adopted negative coping strategy of reducing feeding mouths" (Girl08-NkhongoloniCDSS). NGO staff confirmed: "We had cases of early marriage and pregnancy among our beneficiaries during the school closure" (Respondent3-NGO). Transactional relationships were also reported (36 references). A girl from Mpasa CDSS described the exploitation: "Some men took advantage of the flooding situation. For example, I was asked to have sex with a man in exchange for food" (Girl03-MpasaCDSS).

Sanitation and hygiene challenges (74 references) also affected girls' school attendance. A girl from Mpasa CDSS explained: "Cyclones damages school toilets, this affects girls more especially during menstruation period, making some girls stay at home" (Girl01-MpasaCDSS). One mother group member agreed, "When toilets are damaged, girls have nowhere to manage their menstruation" (Mothergroup2-Likanani, Participant 1). Issues relating to safety risks (62 references) were highly reported in the displacement camps. A focus group discussion participant from Likanani CDSS stated: "In camps, girls risk sexual harassment more than boys. This makes us feel unsafe" (Girl24-FGD-Likanani). Gender norms favouring boys' education (48 references) further compounded retention challenges. One focus group discussion participant from Nkhulambe CDSS stated: "School fees were hard to find when my parents lost source of income due to floods, and boys were sent to school first" (Girl23-FGD-Nkhulambe).

Table 3. Matrix display of gender-specific challenges by school

School	Gender-Specific Challenges	Illustrative Verbatim Excerpt
Mpasa CDSS	Early marriage; increased household chores; sanitation and privacy; transactional sex; gender norms favouring boys	"Some men took advantage... I was asked to have sex with a man in exchange for food." – Girl03-MpasaCDSS
Likanani CDSS	Sanitation; increased household chores; early marriage; transactional relationships; exclusion from support	"School toilets were damaged... Absenteeism for girls increased." – Girl11-LikananiCDSS
Nkhulambe CDSS	Early marriage; sexual harassment; increased chores; gender norms favouring boys; unsafe camps; sanitation	"When floods come, girls are forced to get married... girls are mostly impregnated at the camp." – Girl21-NkhulambeCDSS
Nkhongoloni CDSS	Early marriage; sexual abuse risk; increased chores; unsafe camps; sanitation	"We felt unsafe at the camp where men and women shared one room." – Girl33-NkhongoloniCDSS

Table 3 presents a matrix display of gender-specific challenges across the four schools, showing the types of vulnerabilities reported by individual participants with verbatim extracts.

Adaptive Planning and Institutional Responses in Schools

Adaptive planning was largely absent and reactive. School disaster plans were referenced only 14 times in 7 files, none of which originated from girls. According to one mother group member from Mpasa: "The school did not have a plan for this" (Mothergroup1-Mpasa, Participant 5). Planning was mostly reactive (16 references), with the following comment from one of the NGO respondents: "After cyclones and floods, we brought disaster risk management strategies" (Respondent1-NGO). Plans that did not address girls' needs (16 references) were more than those that did (4 references). A mother group member from Likanani CDSS noted: "There were no

temporary toilets or changing rooms provided for girls. This was a big gap" (Mothergroup2-Likanani, Participant 4).

Table 4. Thematic ranking of adaptive planning systems

Rank	Theme	Total References	Transcripts Affected
1	Reactive Planning	16	8
1	Plans Do Not Address Girls' Needs	16	8
3	School Disaster Plans	14	7
3	NGO-Supported Plans	14	7
3	Limited Participation	14	7
6	Proactive Planning	8	4
7	Plans Address Girls' Needs	4	2

Table 4 presents the thematic ranking of adaptive planning systems. The ranking shows that reactive planning and plans that do not address girls' needs were the most frequently cited themes, while proactive planning and plans that address girls' needs were the least cited.

Strategies for academic adaptation included shift learning (46 references), alternative learning spaces (42 references), additional classes (36 references), and adjusted school calendars (32 references). However, these created unintended consequences. For instance, a girl at Mpasa CDSS pointed out: *"Shift classes exposed girls to danger and evening classes were finished late"* (Girl08-MpasaCDSS). Another explained: *"Temporary classes during flooding exposed some girls to danger as they had to walk long distances through flooded and unsafe areas to reach school"* (Girl04-LikananiCDSS). Coordination and communication among all actors were weak. One girl from Nkhongoloni CDSS shared her experience: *"The school had no clear plan. We were told to go home and wait"* (Girl13-FGD-NkhongoloniCDSS). One teacher from Nkhongoloni CDSS elaborated on the limitations of technology: *"Another adaptive plan is to create a WhatsApp group for communication during the period when there are floods. However, smart phones need frequent charging of batteries but during the time of floods electricity was a challenge"* (Teacher/Admin1-Nkhongoloni). A girl from Nkhulambe CDSS confirmed: *"The school did not coordinate with NGOs effectively"* (Girl15-NkhulambeCDSS).

Feedback Mechanisms and Decision-Making Power Dynamics

Table 5. Thematic Ranking of Girls' Participation in Planning and Feedback

Rank	Theme	Total References	Transcripts Affected
1	Girls Encouraged to Share Views	96	55
2	Someone Consulted Instead	84	54
3	Not Encouraged	76	51
4	Feedback Ignored	70	48
5	Nobody Asked Girls	66	46

Table 5 presents the thematic ranking of feedback and voice themes. The ranking indicates that "encouraged to share views" was the most frequently referenced theme, while "not encouraged", "feedback ignored", and "nobody asked girls" also ranked highly, revealing a contradiction.

Contradictions emerged in feedback mechanisms. Girls being encouraged to share views were mentioned 96 times in 55 files; however, not being encouraged to participate (76 references), feedback ignored (70 references) and nobody asked girls (66 references) were also highly referenced. According to a girl from Mpasa CDSS, *"Girls were encouraged to share their views through meetings at school"* (Girl01-MpasaCDSS). Nevertheless, another girl said, *"Nobody asked me about any challenge"* (Girl02-MpasaCDSS). Another focus group participant added: *"There is a complaint box in the head teacher's office block."* (Girl133-FGD-Nkhongoloni). Another FGD participant stated, *"No, NGOs consulted parents and teachers instead of us"* (Girl21-FGD-

Likanani). A mother group participant agreed, *"Girls are not consulted. Adults speak on their behalf"* (Mothergroup1-Mpasa, Participant 1). Who were consulted instead of girls were referenced 84 times. Consultations of parents occurred the most (48 references); consultation with community leaders (36 mentions), PTA members (28 references), and teachers (20 references) were also mentioned. According to a girl from Mpasa CDSS, *"NGOs speak to teachers not girls when they want to get feedback"* (Girl05-MpasaCDSS). A PTA member confirmed: *"Organizations and the school usually talk to parents and teachers"* (PTA1-NkhongoloniCDSS). Power dynamics in the process of decision-making showed dominance on the part of parents (52 references), community leaders (48 references), and school authority (38 references). One girl in Likanani CDSS said, *"No, because our views were sometimes ignored because adults thought that they already knew what was best for us"* (Girl04-LikananiCDSS).

System Gaps, NGO Role, and Retention Outcomes

The current mechanisms for adaptation and feedback were found to be inefficient in supporting retention. The phrase *"Did not support retention"* was mentioned 70 times in 48 files, which is double the number of mentions of the phrase *"supported retention"* (26 mentions). As an example, a PTA member in Mpasa CDSS stated: *"Some students did not return even after the school reopened because their families had lost everything"* (PTA1-MpasaCDSS). A girl from Likanani CDSS described how selective support contributed to dropout: *"Selective support to NGOs beneficiaries, left other girls without support yet they were equally affected"* (Girl17-LikananiCDSS). Learning disrupted (66 references) and increased risk (66 references) were also highly cited. Identified systematic gaps included communication gaps (46 references), lack of gender-sensitive planning (16 references), coordination issues (16 references), inadequate focus on girls (14 references), and weak systems (14 references). A mother group participant from Likanani CDSS narrated: *"There were no temporary toilets or changing rooms provided for girls. This was a big gap"* (Mothergroup2-Likanani, Participant 4). An NGO staff member from Camfed described existing donor restrictions: *"Donors have strict restrictions. We cannot easily change our activities without lengthy approval processes"* (Respondent2-NGO).

Some interventions were valued, despite limitations. The most common forms of intervention were material assistance (e.g., uniforms, sanitary pads), academic assistance (bicycles, books), and psychological/psychosocial assistance (e.g., counselling). A participant from the focus group discussion in Mpasa CDSS said: *"Camfed provided uniforms and shoes to many girls. This helped because many of us lost our clothes"* (Girl13-FGD-Mpasa). Another noted: *"Age Africa gave us sanitary pads and exercise books. These helped us stay in school"* (Girl12-FGD-Likanani). A girl from Nkhulambe CDSS added: *"Counselling helped me manage stress and prevent self-harm"* (Girl08-NkhulambeCDSS). However, ineffective NGO support was also referenced (76 references). A girl from Mpasa CDSS explained: *"Materials provided were not helpful because they came late after the floods"* (Girl04-MpasaCDSS). A PTA member observed: *"I have not seen much adjustment. The organizations continue to provide the same types of support they always provide"* (PTA1-LikananiCDSS). Unexpected outcomes included exclusion of vulnerable girls (34 references) and increased inequality (30 references). A focus group participant from Likanani CDSS described: *"Selective support to NGOs beneficiaries, left other girls without support yet they were equally affected"* (Girl17-LikananiCDSS). A mother group participant confirmed: *"Only NGO beneficiaries received support. Many equally affected girls were left out"* (Mothergroup1-Nkhulambe, Participant 4).

Recommendations raised by the study participants to improve feedback systems included enhancing feedback systems (74 references), strengthening adaptive planning (62 references), and improving gender responsiveness (56 references). Girls emphasized direct consultation. A focus group participant stated: *"They should consult us directly. They need to ask girls about our needs, not just parents and teachers"* (Girl9-FGD-Mpasa). Another girl from Nkhulambe recommended: *"Collect feedback consistently not just during emergencies so that girls' needs are understood easily and solutions can be planned in advance"* (Girl01-NkhulambeCDSS). A PTA member called for adaptive planning by stating: *"Schools should have a plan for continuing education during disruptions"* (PTA1-LikananiCDSS). An NGO staff member also recommended: *"Donors should include contingency funds in their grants to allow for emergency response"* (Respondent3-NGO). Finally, in terms of gender responsiveness, a girl from Nkhongoloni CDSS stated: *"Ensure temporary separate toilets and changing rooms where girls feel safe from harassment"* (Girl01-NkhongoloniCDSS).

DISCUSSION

Climate-Driven Disruptions and Educational Vulnerability

Results suggest that frequent flooding and cyclones act as chronic stressors rather than isolated shocks (Šakić Trogrlić et al., 2022). Prolonged school closures for more than a week or even a month, physical damage to classrooms and toilets, and repurposing of schools as displacement centers led to prolonged disruptions in learning activities. The household level impact of displacement, lack of food, and destruction of crops that lead to income loss further illustrate that climate disruptions operate through interconnected school and household pathways, supporting a study by Staffieri et al. (2023) who found that rainfall shocks reduce school attendance when household coping capacity is limited.

Gendered Vulnerabilities and Structural Inequality in Retention

The research provides empirical evidence indicating that climate change acts as a multiplier of gender-based inequalities (Malala Fund, 2021). Increase in domestic chores, such as fetching water daily for up to three to five hours meant less time for schooling. Early marriages became a negative coping strategy due to lack of food and the need to "reduce feeding mouths" as highlighted by Plan International (2023). Lack of sanitation due to damaged toilets and changing rooms caused menstruation-related absenteeism (Grant et al., 2013). Safety risks in camps where the girls had to live with men led to sexual abuse, including transactional sex for food, posed great protection concerns. Critically, prioritization of boys' education when household resources are scarce systematically disadvantaged girls, supporting Chikhungu et al. (2020).

Adaptive Planning and Institutional Responses

Adaptive planning was reactive and gender-neutral. None of the schools had a disaster management plan, which is a fundamental failure of learning organization as per the principles of Adaptive Management Theory, which requires repeated cycles of planning and adjusting (Holling, 1978; Walters, 1986). Shift learning by arranging classes during the late afternoon after displaced families left the classrooms posed risks to girls, especially those who had to walk home in the dark along damaged roads and across washed-away bridges. The shift learning process of using temporary classrooms under the tree or tent necessitated longer journeys from flood-stricken areas and displacement camps where they were at risk of sexual harassment. Therefore, these poorly designed adaptations created new safety risks rather than mitigating existing vulnerabilities. Communication gaps, such as schools telling girls to "go home and wait" with no follow-up, and coordination between schools and NGOs further undermined response effectiveness (Chimowa et al., 2024).

Feedback Mechanisms, Power Relations, and Exclusion of Girls

Contradiction emerged. While girls were reportedly "encouraged to share views," their feedback was systematically ignored, and they were never directly consulted. In most cases, parents, teachers, and community leaders dominated decision-making, with adults claiming they "already knew what was best." Based on Stakeholder Theory (Freeman, 1984), this exclusion is considered a fundamental governance failure. There were several barriers, such as lack of communication channels through which feedback could be obtained (suggestion boxes were locked in headmasters' offices), lack of dialogue between the NGOs and the local community members (NGOs consulted only teachers), and gender barriers (girls discouraged from speaking in adult meetings). This tokenistic participation concurs with Masefield et al. (2021) and Chunga et al. (2023) on power hierarchies in Malawian governance.

Integrated Effectiveness on Retention Outcomes

The current mechanisms proved less effective as "did not support retention" was mentioned twice than "supported retention." The exclusion of non-beneficiaries' girls from the NGO's target girls contributed to greater inequality, and material aid arrived too late as the girls had already left school and married. The provision of essential services like uniforms, sanitary pads, bicycles, and counseling was only effective if timely provided and inclusive of girls, validating UNICEF (2024). However, without addressing power dynamics and systematic

exclusion, well-crafted interventions can be ineffective. The exclusion of girls from decision-making processes implies that adaptation strategies can fail to address identified challenges such as security issues, sanitary needs, and household labor burdens.

RECOMMENDATIONS

To support retention of girls in secondary school, this study provides recommendations at three levels. At the policy level, schools need to develop disaster preparedness plans as part of broader adaptive mechanisms. These plans should incorporate gender-responsive provisions, including temporary WASH facilities and safe changing spaces for girls during disasters. Secondly, donors are advised to fund contingency financing mechanisms to enable flexible and timely emergency responses in schools affected by climate shocks. At practice level, NGO partners are advised to develop girl-centered feedback mechanisms, which provide a safe and confidential space for discussion. NGOs should adopt inclusive targeting during emergencies to ensure that all vulnerable girls are reached beyond existing Programme beneficiaries. NGOs are also advised to move from reactive programs to more proactive and anticipatory adaptive programming. Finally, at the system level, formal coordination mechanisms between NGOs, District Education Offices, and schools should be established to reduce fragmented and uncoordinated responses.

LIMITATIONS

This study was conducted using a qualitative multiple-case study design involving four Community Day Secondary Schools in Phalombe District, therefore, the findings are context-specific and may not be directly generalizable to other districts or the national population. Some participants were asked to recall past climate events and institutional responses, which may have introduced recall bias. However, triangulation across different stakeholder groups and data collection methods enhanced the credibility of the findings.

CONCLUSION

In conclusion, strengthening resilience of girls' education in areas affected by climate change requires institutionalization and meaningful engagement of girls in decision-making processes, together with proactive and gender-sensitive adaptive systems. Lack of such engagement means that adaptation efforts may end up perpetuating the existing gender inequalities while at the same time fail to address specific barriers to education faced by girls during climate disruption. Hence, donors and NGOs need to incorporate flexibility within their funding and project implementation mechanisms to successfully deliver effective, timely and context-specific interventions. Furthermore, there is need to strengthen coordination among schools, district education offices, and NGOs to ensure coherent and effective delivery of girls' education projects. Therefore, girls' resilient education systems require gender transformative approaches that prioritize girls' safety, feedback, agency, and adaptation amid escalating climate shocks.

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