Peertechz

Global Journal of
Medical and Clinical Case Reports
OPEN ACCESS JOURNAL

ISSN: 2455-5282 Journal DOI: https://dx.doi.org/10.17352/gjmccr

Mini Review

Building Resilience at the Intersection of Climate, Infrastructure, and Child Protection in Kenya

Philip Nzenge[1] and Damaris Mulwa[2]*

[1]Ministry of Gender, Culture and Children Services, Kenya

[2]Jomo Kenyatta University of Agriculture and Technology, Kenya

Submitted : 12 December, 2025
Accepted : 28 January, 2026
Published : 29 January, 2026

***Corresponding author:** Damaris Mulwa, Jomo Kenyatta University of Agriculture and Technology, Kenya, E-mail: damaris.mulwa@jkuat.ac.ke

Keywords: Climate change; Child protection; Well-being; Policy

https://www.clinsurggroup.us

Check for updates

Executive summary

The lives of millions of children around the world are being affected by the climate crisis. Geography does not protect against climate change; it is affecting children everywhere, even in high-income countries, and the world is not doing nearly enough to protect them. In the last five years, Kenya has been highly vulnerable to the impacts of climate change, including more frequent and intense droughts and floods. These events disproportionately affect children, who are more susceptible to the resulting health, safety, and well-being risks. This brief clearly demonstrates how climate-related disasters, combined with underdeveloped or damaged infrastructure, erode child protection systems and exacerbate vulnerabilities. It argues that for a multispectral and child-centered approach to climate change and resilience, advocating for policies that integrate climate action, infrastructure development, child protection policies, and frameworks to safeguard the rights and future of Kenya's children.

Introduction and background

Climate change can threaten the lives, mental health, and well-being of children [1,2]. They are the most vulnerable to its effects, and those who live in low-income communities are at particularly high risk of harm. Kenya, a low-middle-income country (LMIC), faces a dual challenge of escalating frequency and severity of climate-related disasters and a pervasive vulnerability among its child population [3]. This brief examines how the failure of critical infrastructure, such as drainage systems, school buildings, and water sources, acts as a risk multiplier and exacerbates protection threats for children during climate shocks. Conversely, it highlights how proactive, climate-smart engineering can create a foundational layer of resilience, safeguarding children's rights to safety, education, and affordable health.

Kenya has made a minimal contribution to global emissions, and yet climate change represents a significant and growing threat to its sustainable development [4]. The increasing frequency of extreme weather events, such as the prolonged droughts in arid and semi-arid lands (ASALs) and the devastating floods in urban and rural areas, has severe consequences for human security [5].

While the entire population is at risk, children are among the most vulnerable, with an estimated 1 billion children are facing at least moderate risk from climate and environmental shocks globally [6].

Kenya is experiencing increasingly measurable and severe climate impacts on children and essential infrastructure. According to UNICEF and national vulnerability assessments, over 3.4 million Kenyans were affected by drought between 2020 and 2023, with more than 1.6 million being children, particularly in arid and semi-arid lands (ASALs) [1,3,6]. During the 2023–2024 El Niño floods, more than 300,000 households were displaced nationwide, and over 1 million people were affected, including tens of thousands of school-aged children [7-9]. The floods damaged or destroyed over 1,200 schools, disrupting access to education for more than 500,000 learners, and damaged over 400 health facilities across flood-prone counties such as Tana River, Garissa, Kisumu, and informal settlements in Nairobi [9,10].

Citation: Nzenge P, Mulwa D. Building Resilience at the Intersection of Climate, Infrastructure, and Child Protection in Kenya. Glob J Medical Clin Case Rep. 2026:13(1):016-019. Available from: https://dx.doi.org/10.17352/gjmccr.000238

Child health indicators also demonstrate climate vulnerability: drought-related malnutrition rates in ASAL counties have exceeded 15% - 20% global acute malnutrition (GAM) thresholds during severe drought periods, with children under five being the most affected [2,3]. Flooding events have led to spikes in cholera and malaria incidence, with post-flood disease outbreaks increasing child morbidity by approximately 30% - 40% in affected counties [11]. These quantitative indicators demonstrate that climate change in Kenya is not only an environmental challenge but a direct and escalating child protection, public health, and infrastructure crisis [1,6,12].

Findings from [1] clearly show that 559 million children are currently exposed to high heat wave frequency, rising to all 2.02 billion children globally by 2050. Over the past six years, there were 43 million internal displacements of children linked to weather-related disasters – the equivalent of approximately 20,000 child displacements per day.

The climate crisis is, fundamentally, a child rights crisis as it disrupts access to basic services, strains household economies, and increases the risk of violence, exploitation, and abuse [12]. Existing infrastructure, including schools, health facilities, water sources, and sanitation systems, is often not resilient enough to withstand these shocks, leaving children exposed and unprotected. At the most recent conference, COP28, UNICEF called for several action points which including elevating children within the final COP28 Cover Decision and convening an expert dialogue on children and climate change, embedding children and intergeneration equity in the Global Stocktake (GST), involving children and climate-resilient essential services within the final decision on the Global Goal for Adaptation (GGA) and finally making the Loss and Damage Fund arrangements for child-responsive with child rights embedded in the fund's governance and decision-making process [13].

The intersecting challenges

A. Climate-induced vulnerabilities to child safety

Climate change acts as a threat multiplier, intensifying pre-existing child protection issues.

- **Displacement and Migration:** Floods and droughts force families to leave their homes in search of food and water, often leading to internal displacement [7]. This disrupts children's social networks and exposes them to new dangers, including violence, trafficking, and abduction.
- **Child Labor and Exploitation:** As families lose their livelihoods (livestock, crops), they may resort to harmful coping mechanisms [8]. Children are often forced to drop out of school to engage in dangerous labor, such as sand harvesting or charcoal burning, to supplement family income. Girls, in particular, face heightened risks of sexual exploitation and transactional sex for survival [14].
- **Early Marriage and Gender-Based Violence:** Economic stress and food insecurity during droughts drive some families to resort to child marriage as a means of reducing the number of mouths to feed or securing a dowry [15]. This practice severely curtails girls' rights to education and health, and increases their exposure to gender-based violence.

Between 2019 and 2024, climate-related shocks caused the internal displacement of over 1 million people in Kenya, with children constituting approximately 45% - 50% of displaced populations [7-9,14]. During drought periods, school dropout rates in ASAL regions increase by 20% - 30%, as children are forced into labor, migration, or early marriage as household coping mechanisms [10,15]. Protection assessments indicate that child labor cases increase by over 35% in drought-affected communities, while reports of gender-based violence and child marriage rise by 25% - 40% following prolonged food insecurity periods [12,14,15]. These data confirm that climate change directly amplifies child protection violations and structural vulnerabilities in Kenya [1,6].

B. The infrastructure and service gap

Critical infrastructure is a key factor in building community resilience, yet it is frequently compromised by climate events [16]. For instance, the most recent events, including the devastating

2023-2024 El Niño floods and the Mai Mahiu flash flood (April 2024) illustrate this crisis. On 29 April 2024, a devastating debris flow swept through Mai Mahiu in Kenya. The reports indicated that 48 people were killed and 84 people are missing [9]. The disaster was triggered by heavy rainfall, but there has been considerable misreporting of the cause, with many outlets describing the event as a dam burst.

The 2023–2024 El Niño floods resulted in the destruction of over 8,000 kilometers of roads, the collapse of bridges in at least 15 counties, and damage to more than 1,200 educational institutions [9,10]. Water and sanitation systems were severely affected, with over 2 million people losing access to safe drinking water during peak flooding periods [3,11]. In informal settlements in Nairobi alone, flood damage disrupted sanitation access for over 400,000 residents, significantly increasing exposure to waterborne diseases [3,11]. Health infrastructure damage reduced service delivery capacity by approximately 30% - 50% in flood-affected regions, directly impacting maternal and child healthcare services [2,3]. These figures highlight how climate change systematically undermines Kenya's infrastructure systems and amplifies child vulnerability [5,16].

- **Destruction of Schools:** Flooding often destroys schools or renders roads impassable, interrupting children's education and increasing school dropout rates. This is particularly problematic in areas with already low school enrollment [10].
- **Health and Sanitation Crises:** The destruction of water and sanitation infrastructure leads to a lack of clean

Citation: Nzenge P, Mulwa D. Building Resilience at the Intersection of Climate, Infrastructure, and Child Protection in Kenya. Glob J Medical Clin Case Rep. 2026:13(1):016-019. Available from: https://dx.doi.org/10.17352/gjmccr.000238

water and a rise in waterborne diseases like cholera and typhoid, which are major causes of child mortality. Flooding also increases the risk of vector-borne diseases like malaria [11].

- **Inadequate Social Services:** Under-resourced and inaccessible child protection services are overwhelmed during and after disasters, making it difficult for children to access counseling, psychosocial support, and legal assistance [17].

Study recommendations

Our policy brief recommends the following action points in order to build a true resilience, disaster response model, and a child-centered one.

1. Integration of child protection policy into climate action plans

Kenya's National Climate Change Action Plan (NCCAP) and other climate-related policies should adopt a child protection policy into their plans. Secondly, the NCCAP should allocate a specific percentage of climate finance to child-focused interventions, including community-based child protection programs and policies.

2. Develop climate-resilient infrastructure

To ensure children's physical safety, especially in schools, Kenya should invest in infrastructure that can withstand climate shocks. This includes constructing flood-proof schools and health facilities, and investing in sustainable water management systems like climate-smart boreholes and rainwater harvesting infrastructure. Resilient infrastructure that considers climate risks and planning should be adopted and used.

3. Strengthen social protection systems

This includes creating a robust psychosocial support system and safe spaces for children displaced by climate-related hazards. Scaling up and adapting social safety rules that stand against climate shocks. Lastly, providing conditional cash transfers to affected families to ensure children remain in school during periods of drought or flood.

4. Enhance community-led action and children's participation

- Support and empower local communities, particularly in the ASALs, to develop their own climate adaptation strategies.
- Establish formal mechanisms for children and youth to participate meaningfully in climate policy and planning at the national and county levels, recognizing them not just as victims but as agents of change.

Conclusion

Based on the policy's findings and recommendations, the study concludes that addressing the intersection of climate change, infrastructure, and child protection is not just a moral imperative but a strategic necessity for Kenya's future. Additionally, Kenya can build the resilience required for protecting children by adopting a proactive, integrated, and child-centered policy approach. Finally, every child has the opportunity to survive and thrive, even in the face of a changing climate and policy.

References

1. UNICEF. The climate-changed child. Accessed 2025 Sept 03. Available from: https://www.unicef.org/reports/climate-changed-child
2. Proulx K, Daelmans B, Baltag V, Banati P. Climate change impacts on child and adolescent health and well-being: a narrative review. J Glob Health. 2024;14:04061. Available from: https://jogh.org
3. Kowalcyk M. Vulnerability to the health impacts of climate change in Kenya. Accessed 2025 Sept 06. Available from: https://www.proquest.com/openview/6096115e1bb43cf97c79dd22e91785c9/1?pqorigsite=gscholar&cbl=18750&diss=y
4. Muigua PD. Combating climate change in Kenya for sustainable development. Rochester (NY): Social Science Research Network; 2021 Mar 10. Accessed 2025 Sept 06. Available from: https://papers.ssrn.com/abstract=3833402
5. El Kenawy AM. Hydroclimatic extremes in arid and semi-arid regions: status, challenges, and future outlook. In: El Kenawy AM, Robaa ESM, Torab MMM, Hereher M, editors. Hydroclimatic extremes in the Middle East and North Africa. Elsevier. 2024;1–22. Available from: https://www.sciencedirect.com
6. Rees N. The climate crisis is a child rights crisis: introducing the children's climate risk index. UNICEF; 2021 Aug. Accessed 2025 Sept 06. Available from: https://eric.ed.gov/?id=ED614506
7. Osman AA, Abebe GK. Rural displacement and its implications on livelihoods and food insecurity: the case of inter-riverine communities in Somalia. Agriculture. 2023;13(7):1444. Accessed 2025 Sept 06. Available from: https://www.mdpi.com/2077-0472/13/7/1444
8. Mucherera B, Spiegel S. Forced displacement: critical lessons in the protracted aftermath of a flood disaster. GeoJournal. Accessed 2025 Sept 06. Available from: https://link.springer.com/article/10.1007/s10708-021-10471-w
9. Wikipedia contributors. 2024 Mai Mahiu flash flood. Wikipedia. 2025 Jul 13. Accessed 2025 Sept 06. Available from: https://en.wikipedia.org/w/index.php?title=2024_Mai_Mahiu_flash_flood&oldid=1300292541
10. Akello S. Effects of floods on students' access to secondary education in Nyando District, Kisumu County, Kenya. 2014. Available from: https://erepository.uonbi.ac.ke/handle/11295/76382
11. Hunter PR. Climate change and waterborne and vector-borne disease. J Appl Microbiol. 2003;94(Suppl 1):37–46. Available from: https://onlinelibrary.wiley.com
12. Pereznieto P, Rivett J, Marcus R. Ending violence against children while addressing the global climate crisis. Available from: https://www.odi.org
13. Jiang T, He X, Su B, Havea PH, Wei K, Kundzewicz ZW, et al. COP 28: challenge of coping with climate crisis. The Innovation. 2024;5(1). Available from: https://www.sciencedirect.com
14. Yigzaw GS, Abitew EB, Belay E. Causes and impacts of internal displacement in Ethiopia. Afr J Soc Work. 2019;9(2):32–41. Available from: https://scispace.com/pdf/causes-and-impacts-of-internal-displacement-in-ethiopia-2bzs7o6htw.pdf

Citation: Nzenge P, Mulwa D. Building Resilience at the Intersection of Climate, Infrastructure, and Child Protection in Kenya. Glob J Medical Clin Case Rep. 2026:13(1):016-019. Available from: https://dx.doi.org/10.17352/gjmccr.000238

15. Pope DH, McMullen H, Baschieri A, Philipose A, Udeh C, Diallo J, McCoy D. What is the current evidence for the relationship between the climate and environmental crises and child marriage? A scoping review. Accessed 2025 Sept 06. Available from: https://www.tandfonline.com/doi/full/10.1080/17441692.2022.2095655

16. Osei-Kyei R, Tam V, Ma M, Mashiri F. Critical review of the threats affecting the building of critical infrastructure resilience. Int J Disaster Risk Reduct. 2021;60:102316. Available from: https://www.sciencedirect.com

17. Bartoli A, Stratulis M, Pierre R. Out of the shadows: the role of social workers in disasters. Taylor & Francis; 2025. Available from: https://www.taylorfrancis.com

Citation: Nzenge P, Mulwa D. Building Resilience at the Intersection of Climate, Infrastructure, and Child Protection in Kenya. Glob J Medical Clin Case Rep. 2026:13(1):016-019. Available from: https://dx.doi.org/10.17352/gjmccr.000238