

Exploring the disasters that occur in informal settlements: A case study on the lived experiences of the residents

Nelly Busisiwe Ntuli¹ and Justus Ngala Agumba²

^{1&2}Department of Building Science, Faculty of Engineering and the Built Environment, Tshwane University of Technology, South Africa

DOI: 10.36108/cbpm/2026.0135

Abstract

The study explores the nature and impact of disasters occurring in informal settlements, focusing on the lived experience of residents.

Purpose: This study explores how environmental, social, and infrastructural vulnerabilities shape disaster occurrence and responses in informal settlements, addressing the limited understanding of residents' lived experiences of disaster risks.

Design: A qualitative case study approach was adopted, using in-depth semi-structured interviews with 20 purposively selected participants. Data were collected in line with ethical protocols, including informed consent, and analysed using thematic analysis to identify patterns of vulnerability and coping strategies. Data collection continued until saturation was achieved.

Findings: Residents experience recurring hazards such as flooding, fires, and disease outbreaks, intensified by inadequate housing, poor service delivery, and weak institutional support. Despite these conditions, strong community-based coping mechanisms and informal support networks enhance local resilience. The findings provide context-specific insights consistent with existing literature on disaster vulnerability and resilience in informal settlements.

Research Limitations and Implications: The study focuses on a single informal settlement, limiting generalisability; however, the findings offer transferable insights for similar contexts. The study contributes to understanding the interplay between vulnerability and resilience in disaster-prone informal settlements.

Practical Implications: The study highlights the need for targeted disaster risk reduction strategies, including improved drainage systems, housing upgrades, and enhanced service delivery. Effective implementation requires collaboration among local government, NGOs, and community leaders, with interventions structured across short- and long-term planning horizons

Keywords: Disaster risk reduction; Informal settlements; Lived experiences; Vulnerability; Resilience; South Africa

1. Introduction

Rapid urbanisation continues to increase pressure on housing systems in cities worldwide. The United Nations projects that the global urban population will reach 68% by 2050 (United Nations, Department of Economic and Social Affairs, 2018). This growth has intensified demand for affordable housing, particularly in developing countries (Wanjiru & Pahari, 2024). However, formal housing delivery often fails to meet this demand, resulting in the expansion of informal settlements in many urban areas (Marutlulle, 2021).

Informal settlements refer to residential areas that develop outside formal planning regulations and legal land tenure systems (Geyer Jr, 2023). These settlements are typically characterised by inadequate infrastructure, limited access to basic services, and insecure housing structures (Chumo, et al., 2023). Such conditions increase residents' exposure to environmental hazards and heighten social vulnerability (Palacios, et al.,

2022). In this study, "disasters" are defined as both environmental hazards (such as flooding and fires) and the socio-economic and infrastructural conditions that intensify their impacts on vulnerable communities.

Environmental conditions within informal settlements further elevate disaster risk. Many settlements are located on marginal land such as riverbanks, wetlands, steep slopes, or near waste disposal sites (Oktarini, et al., 2023). These locations expose residents to hazards including flooding, landslides, fires, and pollution-related events (Tavares, et al., 2024). Housing structures, often built from materials such as timber, plastic sheeting, and corrugated metal, are highly susceptible to fire and structural failure ((Quiroz, et al., 2021); (Dutta, et al., 2024)). In addition, limited road access and high population density restrict emergency response during disasters (Abudu, et al., 2025), further increasing risk and prolonging recovery.

¹ Corresponding Author

Email address: 219170980@tut4life.ac.za

Drawing from established disaster perspectives, ranging from Acts of Nature to socially constructed risks (Lindell, et al., 2006); this study conceptualises disasters as the outcome of interconnected environmental, social, and economic factors that shape vulnerability in informal settlements.

Disasters affect multiple dimensions of life in informal settlements. They damage housing, disrupt livelihoods, and destroy essential household assets ((Comerio, 2023); (Kim, et al., 2025)). Health risks increase due to overcrowding, poor sanitation, and exposure to contaminated water (Walika, et al., 2023), while residents often experience psychological stress and uncertainty (Hambrecht, et al., 2022). Despite these impacts, existing research tends to focus on economic loss and physical infrastructure damage, with limited attention given to residents' lived experiences and how these intersect with broader structural conditions.

This study addresses this gap by exploring how disasters are experienced in everyday life within an informal settlement context, with attention to the interaction between environmental hazards and social vulnerability. It is guided by the following research questions: (1) How do residents in informal settlements experience disasters in their daily lives? (2) What environmental, social, and infrastructural factors shape their vulnerability to disasters? (3) What coping strategies do residents employ before, during, and after disaster events? A qualitative case study approach was adopted, using semi-structured interviews with twenty participants, and thematic analysis to identify recurring patterns of vulnerability and coping.

2. Literature Review

2.1. *Demystifying Disasters in Urban Contexts*

Disasters have increasingly been understood as products of social organisation rather than inevitable consequences of natural hazards. Earlier theoretical discourses framed floods, storms, or fires as external shocks detached from human systems (Chmutina, et al., 2019). Contemporary urban and disaster scholarship, however, conceptualises disasters as processes embedded within patterns of inequality, governance arrangements, and development trajectories (Oliver-Smith, 2022). From this perspective, hazards only become disasters when they intersect with vulnerable populations and fragile urban systems. This shift is critical for understanding disaster risk in informal settlements, where exposure is shaped by structural and spatial inequalities rather than by hazards alone. Cities, particularly in low- and middle-income countries, illustrate this process, as rapid urbanisation often occurs alongside inadequate housing provision, weak infrastructure, and limited planning control (Gunaratna & Wimalaratana, 2025). Disasters thus reveal how urban environments are produced and for whom they function. This perspective is particularly relevant to

informal settlements, where structural inequalities directly shape exposure, sensitivity, and recovery. This conceptual shift moves analysis away from the hazard itself towards the conditions that shape exposure, sensitivity, and recovery, laying the foundation for understanding disasters as socially constructed and unevenly experienced phenomena.

This framing is evident in urban contexts across Asia, Africa, and Latin America, where disaster impacts are closely linked to informal urban development. In Bangladesh and India, informal settlements located along riverbanks and floodplains experience recurrent flooding, disrupting livelihoods and household stability (Islam, et al., 2024). In Kenya and Nigeria, cities such as Nairobi and Lagos report frequent fire outbreaks associated with dense housing and unsafe energy practices (UN-Habitat, 2020). These urban experiences demonstrate that disaster impacts are patterned along socio-economic and spatial lines rather than randomly distributed. These patterns reinforce the argument that disaster risk is socially produced and closely tied to how cities are planned and governed. In each case, disasters expose the underlying conditions of exclusion and infrastructural neglect that shape everyday urban life. Rather than exceptional moments of crisis, disasters emerge as recurring manifestations of how cities manage land, housing, and services.

In South Africa, similar structural dynamics are evident. National disaster profiles identify flooding and shack fires as dominant urban risks, particularly in informal settlements (National Disaster Management Centre, 2021). Provinces such as KwaZulu-Natal and Gauteng experience repeated flood events affecting vulnerable communities (Department of Water and Sanitation, 2022). Within the City of Tshwane, recurring shack fires are linked to overcrowding, informal electricity connections, and limited emergency access (City of Tshwane, 2020). These repeated events illustrate that disasters are not isolated incidents but part of everyday urban vulnerability. This highlights the importance of examining disasters within their local context, particularly in cities such as Tshwane where informal settlements are highly exposed to recurring risks. Demystifying disasters in this context requires recognising them as outcomes of historical spatial inequality, uneven service delivery, and constrained municipal capacity, rather than as unpredictable natural occurrences.

2.2. *Conceptualisation of Informal Settlements*

Informal settlements are increasingly understood as outcomes of urban governance processes rather than anomalies existing outside the formal city. Contemporary theory conceptualises informality as a structural condition shaped by state regulation, market dynamics, and selective enforcement (Park, et al., 2025). Informality thus emerges from the interaction between formal systems and populations excluded from

affordable housing and secure tenure. This perspective is important for disaster studies, as it positions informal settlements not merely as vulnerable spaces but as products of systemic exclusion that influence disaster risk exposure. Informal settlements therefore exist in relation to, rather than in opposition to, the formal city (Changsoo, 2023).

This understanding is evident across diverse urban contexts. In Brazil, favelas in Rio de Janeiro and São Paulo have evolved into long-established communities, often located near economic centres yet excluded from full infrastructure integration (Fix & Arantes, 2022). In India, informal settlements in cities such as Delhi and Mumbai accommodate large segments of the urban workforce, despite persistent tenure insecurity and service deficits (Sociology Institute, 2025). In Accra, Ghana, and Addis Ababa, Ethiopia, informal settlements have expanded rapidly due to rural-urban migration and constrained formal housing supply (International Organization for Migration, 2015); (Shafi & Negussie, 2022)). Across these cities, informal settlements are characterised by high residential density, incremental housing construction, and uneven access to services such as water, sanitation, and electricity (Abagissa, 2019). Global estimates suggest that more than one billion people reside in informal settlements worldwide, with the majority living in Africa and Asia (United Nations, 2022). These conditions are directly linked to increased disaster vulnerability, particularly in relation to flooding, fires, and health risks. These patterns underscore that informal settlements are not transitional anomalies, but durable and integral components of contemporary urbanisation.

In South Africa, the conceptualisation of informal settlements is inseparable from the country's history of racialised spatial planning and enduring socio-economic inequality. Apartheid-era land and housing policies systematically excluded the majority of the population from well-located urban land, producing fragmented cities that persist in the democratic era (COGTA, 2016). Informal settlements in metropolitan areas such as Johannesburg, Tshwane, and eThekweni are shaped by this legacy, alongside slow housing delivery and rapid urban growth. National policy frameworks recognise informal settlements as areas characterised by insecure tenure, inadequate infrastructure, and limited access to basic services (Department of Human Settlements, 2025). Statistics South Africa reports that approximately 12–13 per cent of households live in informal dwellings, with higher concentrations in Gauteng Province (Stats SA, 2023). Within the City of Tshwane, informal settlements range from long-established communities with partial service access to newer settlements lacking basic infrastructure (Chaane, 2025). This context is important for understanding how historical inequality continues to shape present-day disaster risk in informal settlements.

2.3. The Nexus Between Disasters and Informal Settlements

The relationship between disasters and informal settlements is best understood through the ways urban space is produced and governed, rather than through the characteristics of hazards alone (Del Pinto, et al., 2024). Informal settlements emerge where formal planning systems fail to provide accessible land, affordable housing, and basic services, resulting in the concentration of vulnerable populations in environmentally precarious locations (UN-Habitat, 2018). Disaster risk is therefore embedded in everyday urban conditions such as overcrowding, informal construction, and infrastructure deficits. This suggests that disasters do not create vulnerability but rather expose and intensify pre-existing conditions. When hazards occur, they expose these accumulated vulnerabilities rather than introducing new ones. Informal settlements thus function as critical sites where socio-economic marginalisation, spatial exclusion, and environmental exposure converge. Disasters in these spaces are not episodic interruptions, but predictable outcomes of urban development pathways that privilege some populations while rendering others disproportionately at risk (Agbo, 2026).

This pattern is evident across diverse urban contexts beyond a single region. In Brazil, informal settlements such as favelas in Rio de Janeiro and São Paulo experience frequent landslides and flooding linked to hillside occupation and inadequate drainage infrastructure (Verniz, 2020). In Peru, informal neighbourhoods in Lima located on arid slopes face recurring flood damage during El Niño events, exacerbated by poor stormwater management (Jarman, 2020). In Southeast Asia, informal settlements in Jakarta, Indonesia, are routinely affected by flooding due to land subsidence, river encroachment, and limited access to protective infrastructure (Meshkani, 2024). In Southern Europe, informal Roma settlements in parts of Romania and Italy have been disproportionately affected by floods and fires, reflecting social exclusion rather than environmental exposure alone (Alexandrescu, et al., 2024). These varied cases demonstrate that the disaster-informality nexus is a global urban phenomenon, shaped by how cities manage land, infrastructure, and inequality rather than by geography or climate alone.

In South Africa, similar dynamics are evident, though shaped by the country's unique spatial history. National disaster reports consistently identify informal settlements as areas of heightened vulnerability to flooding and shack fires (NDMC, 2024). In Gauteng Province, rapid urban growth and land scarcity have resulted in informal settlements occupying low-lying or poorly serviced land, increasing exposure to seasonal flooding and fire outbreaks (Nhamo, et al., 2021). Within the City of Tshwane, informal settlements

experience recurrent shack fires and flood incidents associated with inadequate infrastructure (Mogotsi, 2024). These repeated events disrupt livelihoods, damage dwellings, and strain household coping capacities. Over time, disasters become normalised within these communities, reinforcing cycles of vulnerability and recovery. This underscores the need to examine disaster risk as a continuous condition rather than as isolated incidents.

2.4. Community Lived Experiences of Disasters in Informal Settlements

Approaching disasters through lived experiences highlights how risk and recovery are encountered in everyday life (Ramalho, 2020). In informal settlements, repeated exposure creates conditions where disasters become normalised, shaping behaviour and coping strategies (Ncube, et al., 2023). This perspective is critical because it shifts analysis from institutional responses to resident experiences, providing deeper insight into vulnerability and resilience. Experiences of fear, uncertainty, and resilience are inseparable from struggles over housing, livelihoods, and access to services. Lived experiences therefore reveal dimensions of disaster impact that extend beyond physical damage, including psychological stress, social disruption, and prolonged insecurity (WHO, 2025). By centring everyday experiences, disasters are understood as social processes that unfold over time, shaping how residents navigate informality and vulnerability within urban environments.

Accounts from informal settlements in Latin America, Asia, and Southern Africa illustrate how disasters are lived as cumulative and repetitive phenomena. In Medellín, Colombia, residents describe landslides as recurring threats that shape everyday decision-making (Smith, et al., 2020). In Port-au-Prince, Haiti, repeated disasters have led to strong community-based coping strategies (Rivera, 2024). In Jakarta, Indonesia, seasonal flooding disrupts livelihoods and health (Meshkani, 2024). In Cape Town, South Africa, residents affected by shack fires report prolonged recovery and overcrowding (Pienaar, 2021). These studies highlight that disasters are experienced through cycles of loss, adaptation, and incomplete recovery. Social networks and community knowledge play a critical role in navigating these conditions.

In Gauteng Province, lived experiences reflect similar patterns of repetition and normalised risk. Residents report recurring fires and floods, resulting in loss, displacement, and prolonged recovery ((Mogotsi, 2024); (Zhou, et al., 2022)). Recovery is largely self-managed, relying on community support and incremental rebuilding. However, there remains limited research that directly captures how these lived experiences shape coping strategies and perceptions of risk at the local level.

3. Methodology

A qualitative single case study design was applied to examine disaster experiences in one informal settlement called “Marry Me”, located in the City of Tshwane, South Africa. The approach focused on perceptions, meanings, and coping strategies rather than statistical measures. Limiting the scope to one settlement allowed detailed analysis of environmental, infrastructural, and institutional vulnerabilities shaping disaster patterns and responses.

3.1. Study Area

The Marry Me informal settlement faced poor infrastructure, overcrowding, and repeated hazards including floods, fires, and disease outbreaks. Its history of disasters and visible vulnerabilities made it suitable for in-depth study.

3.2. Sampling Strategy and Participants

Purposive sampling was used to identify participants with direct experience of disasters. The target population comprised community members and representatives aged 18 years and above, with a minimum of five years’ residence and direct experience of disaster events within the settlement. A total of 20 participants were recruited, including 18 community members, 1 community representative, and 1 ward councillor, ensuring diversity in age, gender, and length of residence. Data collection continued until saturation was reached, with no new themes emerging after the twentieth interview.

3.3. Data Collection

Semi-structured interviews were conducted with all 20 participants. Themes explored included disaster experiences, perceived causes, coping strategies, and institutional responses. Interviews were conducted in Setswana, a language understood and preferred by all participants, and lasted between 20 and 30 minutes. With participants’ consent, 8 interviews were audio-recorded, while the remaining 12 were documented through detailed handwritten notes. Interviews were subsequently transcribed and translated into English, with careful attention to preserving the meaning and nuance of participants’ responses.

3.4. Ethics

Ethical clearance was granted by the Tshwane University of Technology Research Ethics Committee. Written informed consent was obtained from all participants. Anonymity and confidentiality were maintained through the use of pseudonyms and removal of identifying information. Participants were informed of their rights, including the right to withdraw at any stage. Interviews were conducted with sensitivity to the potential emotional impact of discussing disaster experiences.

3.5. Data Analysis

Thematic analysis was conducted following (Braun & Clarke, 2006)'s six-step framework. Coding was conducted manually, with thematic codes generated from recurring concepts and significant points raised by participants. The process was iterative, allowing themes to emerge inductively from the data. Credibility of the analysis was enhanced through careful comparison of codes across transcripts and consistent interpretation of themes.

3.6. Trustworthiness

Lincoln and Guba's (1985) criteria were applied to ensure methodological rigour. Credibility was supported through member checking. Transferability was enhanced through rich contextual description. Dependability was ensured through systematic documentation of the research process, and confirmability was maintained through reflexive notes and an audit trail.

3.7. Limitations

The use of a single case study limits generalisability. However, the findings provide analytical insights that are transferable to similar informal settlement contexts.

4. Findings And Discussion

The study generated three major themes: (1) types of disasters experienced, (2) factors contributing to vulnerability, and (3) lived experiences of residents. These themes are discussed in relation to existing literature on disaster vulnerability and resilience in informal settlements.

4.1. Types of Disasters Experienced

Disasters in informal settlements are frequent and varied, reflecting fragile environmental and infrastructural conditions. Participants identified flooding, fires, and health-related risks as the most common hazards.

"Flooding is a major challenge here. The slope of the land is not ideal, and the soil retains a lot of water" (Participant 13).

"Fires caused by illegal electrical wiring pose a serious hazard, sometimes resulting in children being electrocuted while playing in the streets" (Participant 1).

"My house faces a large heap of waste where residents dump their rubbish, and no one comes to collect it. Despite how unsanitary it is, children still play there, and as a result, they often catch infections and spread them to others. There are a lot of rats coming from the dumping site, and the smell is also very unpleasant. We have to buy pesticides because the rats are a constant problem, but there is nothing we can do about the bad odour" (Participant 4, 12).

These findings align with existing studies which identify flooding and fires as dominant risks in informal settlements due to poor drainage systems, unsafe energy practices, and inadequate waste management (UN-Habitat, 2020; Tavares et al., 2024). This supports the argument that hazards become disasters when they intersect with vulnerable urban environments shaped by infrastructural deficits (Oliver-Smith, 2022).

4.2. Factors Contributing to Vulnerability

Participants identified environmental, infrastructural, and socio-economic drivers of vulnerability.

"Most of the houses are built from temporary materials like zinc sheets and wood, often without proper foundations. That makes them extremely vulnerable to strong winds, heavy rains, and fires" (Participant 15).

"Because the land slopes downwards, water always runs toward us and gets trapped here with no way out" (Participants 5, 20).

"Unemployment is another big issue which also increases the number of young people on the streets, which sometimes contributes to crime and makes it harder to maintain social order during emergencies" (Participant 15).

"Access for emergency services is limited due to narrow, unplanned routes, making it difficult for ambulances, fire trucks, or police to reach people in urgent situations" (Participants 8, 15).

"Lack for secure land tenure. Without legal land ownership, we are excluded from government assistance or disaster planning efforts" (Participant 16).

"Sanitation facilities are often communal and poorly maintained, with overflowing toilets and uncollected waste posing serious public health risks" (Participant 6).

"Lack of education and access to information is also a challenge. Many residents are not aware of early warning systems or disaster preparedness strategies, so they are caught off guard when emergencies happen. We only hear about warnings after the damage is already done" (Participants 5, 11, 15).

"At the local level, we try to advocate for services and raise awareness, but we are limited by budget constraints and policy limitations. So, while there are efforts being made, I do believe that stronger, more inclusive policies and targeted investments are urgently needed to reduce the community's vulnerability" (Participant 15).

“Some people do not have ID documents, so they cannot apply for aid or assistance from NGOs after disasters” (Participants 10, 11).

These findings confirm existing literature that disaster vulnerability in informal settlements is socially produced and linked to poor housing conditions, insecure tenure, and limited-service provision (UN-Habitat, 2018; Del Pinto et al., 2024). They further support studies highlighting how governance failures and spatial inequality increase exposure to hazards (Agbo, 2026; Nhamo et al., 2021).

Importantly, this study extends current knowledge by emphasising the role of documentation status and institutional exclusion, which limits access to post-disaster aid, an aspect less explored in existing disaster literature.

4.3. Lived Experiences of Residents

Participants described disasters as deeply disruptive to daily life, affecting emotional well-being, livelihoods, and security.

“With no electricity, I am always anxious that the candles or paraffin stove might cause a fire while I am away” (Participant 14).

“It was terrifying. I did not know if my shack would collapse, so I stayed up all night with a candle, watching the roof leak. After the attacks, many people moved out. The ones who stayed feel abandoned and forgotten” (Participants 2, 18).

“Many live hand-to-mouth, so even a small disruption like flooding or a fire, can push them into crisis” (Participants 9, 12, 15).

“We lost everything: clothes, IDs, my kids’ schoolbooks. My kids missed school because their uniforms were soaked and muddy. They were too embarrassed to go” (Participants 13, 17, 20).

“I saw things I wish I had not. Dead bodies in the street, mothers crying. That disaster changed how we see this place forever. The children became very fearful. They do not play outside anymore, and they cry during thunderstorms” (Participants 2, 11, 20).

“I had no way to call for help. My phone got wet in the flood and I could not reach anyone” (Participant 3).

“What truly breaks my heart is how unsafe and insecure our settlement is. The types of crimes that happen here are beyond words. My daughter is now disabled and unable to speak, she was one of the community patrollers who was attacked by thugs” (Participant 7).

“Rain washes our plants every time with its flooding, such that as residents we can no longer plant vegetables, leaving us with fewer ways to feed their families. As a result, many residents have lost one of the few ways they had to feed their families. Floods often wash through our homes and damaging belongings” (Participants 18, 19, 14).

These accounts reinforce literature that conceptualises disasters as lived, ongoing processes rather than isolated events, shaping everyday experiences of risk and recovery (Ramalho, 2020; Ncube et al., 2023). They also align with findings that disasters in informal settlements produce long-term psychological, social, and economic impacts (WHO, 2025; Hambrecht et al., 2022).

Furthermore, the findings contribute to this body of work by illustrating how fear, loss of dignity, and disrupted childhood experiences form part of the long-term impacts of disasters, particularly in contexts of repeated exposure.

5. Conclusion And Further Research

The study highlights the recurring nature of disasters in informal settlements and the structural conditions that intensify vulnerability. Flooding, fires, and disease outbreaks emerge as persistent hazards shaped by inadequate infrastructure, overcrowding, and weak institutional support. Residents’ lived experiences reveal both the immediate impacts of disasters and the coping strategies developed within constrained environments.

Importantly, the study contributes to knowledge by demonstrating how disaster risk is embedded in everyday socio-economic and spatial conditions, rather than occurring as isolated events. It provides context-specific insight into how vulnerability and resilience interact in informal settlements, particularly within the Tshwane context.

The findings underscore the need for targeted and context-specific disaster risk reduction interventions that address both physical vulnerabilities and social resilience. Practical measures include improving drainage systems to reduce flooding, upgrading housing structures to enhance fire resistance, and strengthening access to basic services such as waste management and sanitation. Effective implementation requires collaboration between local government, non-governmental organisations, and community leadership structures. Interventions should be structured across short-term (emergency response and awareness), medium-term (service delivery improvements), and long-term (infrastructure upgrading and settlement planning) strategies.

The research further demonstrates that disaster vulnerability is shaped by structural inequalities, including insecure land tenure, limited access to services, and governance constraints. Addressing these challenges requires integrated approaches that combine urban planning, infrastructure development, and community-based disaster management.

Further research should expand beyond a single settlement to include comparative studies across multiple urban contexts. Longitudinal research is needed to understand how vulnerabilities and coping strategies evolve over time. Incorporating quantitative data alongside qualitative insights would provide a more comprehensive understanding of risk patterns and resilience mechanisms. Future studies should also examine institutional coordination, particularly the

roles of municipal authorities, NGOs, and community organisations in disaster response. Additionally, research focusing on gender, age, and socio-economic differences would provide deeper insight into differentiated disaster experiences and vulnerabilities.

By grounding disaster research in lived experiences and structural realities, future work can inform more inclusive and effective policies aimed at strengthening resilience in informal settlements.

References

- Abagissa, J., 2019. INFORMAL SETTLEMENTS IN ADDIS ABABA: EXTENT, CHALLENGES AND MEASURES TAKEN. *Journal of Public Administration, Finance and Law*, Issue 15, pp. 7-30.
- Abudu, H. D., Mewomo, C. M., Adje, K. O. & Bondinuba, F. K., 2025. CHALLENGES IN EMERGENCY RESPONSE INFRASTRUCTURE. *Journal of Civil Engineering, Science and Technology*, 16(2), pp. 269-279.
- Agbo, S. O., 2026. Invisible Fault Lines: Health Inequities and Resilience in Informal Urban Settlements. In: H. Jatav, U. Singh, V. D. Rajput & S. K. Singh, eds. *Urban Environments and Human Health*. London: IntechOpen.
- Braun, V. & Clarke, V., 2006. Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), pp. 77-101.
- Chaane, T., 2025. *The Citizen: R649.8-million earmarked for upgrading of informal settlements*. [Online] Available at: <https://www.citizen.co.za/rekord/news-headlines/2025/04/28/r649-8-million-earmarked-for-upgrading-of-informal-settlements/> [Accessed 16 March 2026].
- Changsoo, R., 2023. Changing Dynamics of Urbanization and Social Inequality: A Case Study of Informal Settlements in Bangkok, Thailand. *International Journal of Science and Society*, 5(3), pp. 377-387.
- Chmutina, K., von Meding, J. & Bosher, L., 2019. *Language matters: Dangers of the "natural disaster" misnomer*. *Global Assessment Report on Disaster Risk Reduction*, Online: Global Assessment Report on Disaster Risk Reduction (GAR 2019).
- Chumo, I., Kabaria, C., Shankland, A. & Mberu, B., 2023. Drivers of vulnerability to health and wellbeing challenges in informal settlements. *Frontiers in Sustainable Cities*, Volume 5, p. 1057726.
- City of Tshwane, 2020. *CITY OF TSHWANE INTEGRATED DEVELOPMENT*, Pretoria: City of Tshwane.
- COGTA, 2016. *Integrated Urban Development Framework*, Pretoria: Department of Cooperative Governance and Traditional Affairs.
- Comerio, M. C., 2023. *Disaster Hits Home: New Policy for Urban Housing Recovery*. London: University of California Press.
- Del Pinto, M., Chmutina, K., Palaiologou, F. & Bosher, L., 2024. The Role of the Spatial Network in Urban Disaster Risk Variations: Reimagining the Notion of Spatial Vulnerability at the Urban Scale. *International Journal of Disaster Risk Science*, 15(3), p. 303–316.
- Department of Human Settlements, 2025. *South African Government*. [Online] Available at: https://www.gov.za/sites/default/files/gcis_document/202501/52013gon5801.pdf [Accessed 16 March 2026].

- Department of Water and Sanitation, 2022. *Flood Situation Reports and Hydrological Updates for KwaZulu-Natal and Gauteng Provinces*, Pretoria: Government of South Africa.
- Dutta, S., Ahmad, F., Islam, R. & Kaiser, M. S., 2024. Evaluating the fire-reaction properties of building materials used in informal settlements in Dhaka, Bangladesh.. *Asia-Pacific Journal of Science and Technology*, 29(6), pp. 1-14.
- Fix, M. & Arantes, P. F., 2022. On urban studies in Brazil: The favela, uneven urbanisation and beyond. *Urban Studies*, 59(5), pp. 893-916.
- Geyer Jr, H. S., 2023. Conflicts and synergies between customary land use management and urban planning in informal settlements. *Land Use Policy*, Volume 125, p. 106459.
- Gunaratna, K. L. & Wimalaratana, W., 2025. Urbanization Trends and Policy Implications in Low- and Middle-Income. *Sri Lanka Economic journal*, 22(1), pp. 124 -138.
- Hambrecht, E., Tolhurst, R. & Whittaker, L., 2022. Climate change and health in informal settlements: a narrative review of the health impacts of extreme weather events. *Environment & Urbanization*, 34(1), pp. 122-150.
- Islam, M. B. et al., 2024. Assessing the vulnerability of selected coastal informal settlements to floods in the Old Brahmaputra River floodplain, Bangladesh. *Urban Climate*, Volume 56, p. 102078.
- Jarman, C., 2020. *Resisting El Niño*., Lund: Lund University.
- Kim, Y. E., Lee, J. & Kim, H., 2025. How do flood risk–socioeconomic interactions influence household income dynamics in shrinking cities of the Rust Belt in the US?. *International Journal of Disaster Risk Reduction*, Volume 130, p. 105824.
- Lindell, M. K., Prater, C. S., Perry, R. W. & Nicholson, W. C., 2006. *Fundamentals of Emergency Management*. Washington DC: s.n.
- Marutlulle, N. K., 2021. A critical analysis of housing inadequacy in South Africa and its ramifications. *Africa's Public Service Delivery and Performance Review*, 9(1), p. 372.
- Meshkani, T., 2024. Climate change and flooding: governmental responses to displacement and relocation in Jakarta's informal neighborhoods. *International Journal of Disaster Resilience in the Built Environment*, 15(4), pp. 551-570.
- Mogotsi, D. A., 2024. *Informal Urban Settlements, Adverse Weather Events and Adaptation: Responses to Incidents of Flash Flooding by Residents in Eerste Fabriek, Mamelodi*, Pretoria: University of Pretoria.
- National Disaster Management Centre, 2021. *National Disaster Risk Profile / Disaster Risk Awareness Publications*, Pretoria: Department of Cooperative Governance.
- Ncube, S. et al., 2023. Understanding resilience capitals, agency and habitus in household experiences of water scarcity, floods and fire in marginalized settlements in the Cape Flats, South Africa. *Social Sciences & Humanities Open*, 8(1), p. 100710.
- Nhamo, L. et al., 2021. Urban nexus and transformative pathways towards a resilient Gauteng City-Region, South Africa. *Cities*, Volume 116, p. 103266.
- Oktarini, M. F., Hapsari, H. & Triyuli, W., 2023. The social and cultural aspects of waste disposal management in the planning revitalization of riverbank settlement. *Humaniora*, 14(1), pp. 31-38.
- Oliver-Smith, A., 2022. Critical Disaster Studies: The Evolution of a Paradigm. In: S. Uekusa, S. Matthewman & B. C. Glavovic, eds. *A Decade of Disaster Experiences in Ōtautahi Christchurch*. Singapore: Springer Nature, p. 27–53.
- Palacios, A., Gabosi, J., Williams, C. R. & Rojas-Roque, C., 2022. Social vulnerability, exposure to environmental risk factors, and accessibility of healthcare services: Evidence from 2,000+ informal settlements in Argentina. *Social Science and Medicine*, Volume 309, p. 115290.
- Park, M., Foster, C. & Heeks, R., 2025. Conceptualising urban informality in the platform economy: regulation, legitimisation, value extraction and collective agency. *International Development Planning Review*, 47(3), pp. 283-308.
- Pienaar, J. C., 2021. *ASSESSING EMERGENCY RESPONSE MECHANISMS TO INFORMAL SETTLEMENT FIRES IN CAPE TOWN*, Bloemfontein: UNIVERSITY OF THE FREE STATE.
- Quiroz, N. F., Walls, R. & Cicione, A., 2021. Towards Understanding Fire Causes in Informal Settlements Based on Inhabitant Risk Perception. *Fire*, 4(3), p. 39.

- Ramalho, J., 2020. Engendering disaster risk management and resilience-building: The significance of the everyday in evaluations of the exceptional. *International Journal of Disaster Risk Reduction*, Volume 50, p. 101830.
- Rivera, H., 2024. *Design After Disasters: Rebuilding Haiti*, Cincinnati: University of Cincinnati.
- Shafi, N. & Negussie, T., 2022. *The Growth of Informal Settlements in Addis Ababa: Causes and Policy Implications.*, Addis Ababa: Addis Ababa University.
- Smith, H. et al., 2020. Toward negotiated mitigation of landslide risks in informal settlements: reflections from a pilot experience in Medellín, Colombia. *Colombia. Ecology & Society*, 25(1).
- Stats SA, 2023. *General Household Survey*, Pretoria: Statistics South Africa.
- Tavares, C. et al., 2024. A global (South) collective burden: A systematic review of the current state of climate-related hazards in informal settlements. *International Journal of Disaster Risk Reduction*, Volume 114, p. 104940.
- UN-Habitat, 2018. *Pro-poor climate action in informal settlements*, Nairobi: United Nations Human Settlements Programme.
- UN-Habitat, 2020. *World Cities Report*, Nairobi: United Nations Human Settlements Programme.
- United Nations, Department of Economic and Social Affairs, 2018. *2018 Revision of World Urbanization Prospects*, New York: United Nations.
- Verniz, D., 2020. *Understanding the genesis of form in Brazilian informal settlements: towards a grammar-based approach for planning favela-like settlements in steep terrains in Rio de Janeiro.*, Pennsylvania: The Pennsylvania State University.
- Walika, M., De Almeida, M. M., Delgado, R. C. & González, P. A., 2023. Outbreaks Following Natural Disasters: A Review of the Literature. *Disaster Medicine and Public Health Preparedness*, Volume 17, p. e444.
- Wanjiru, L. & Pahari, K., 2024. UNDP. [Online] Available at: <https://www.undp.org/blog/why-housing-matters?> [Accessed 15 March 2026].
- Zhou, B., Zhang, H. & Evans, R., 2022. Build back better: A framework for sustainable recovery assessment. *International Journal of Disaster Risk Reduction*, Volume 76, p. 102998.