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Article

Climate Change and Human Security in KwaZulu-Natal, South Africa: An Assessment of the 2022 Provincial Floods

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Abstract: The South African province of KwaZulu-Natal (KZN) is reeling from the impacts of the 2022 floods that swept off communities in not fewer than six districts in the province, leaving death and massive loss and damage in their trail. Based on the qualitative method, dwelling largely on secondary data analysis, and supported by five interviews and the conceptual framework that holds that resilience is security. The paper finds that the people of KwaZulu-Natal suffered multidimensional security threats during the floods. The paper notes further that this is a product of weak climate resilience building, despite the existence of climate change response and disaster management policies and strategies in the province and South Africa. The paper concludes that the province has a weak resilience against sudden-onset climate events that are predicted to be more regular in the future. This shows that it's the climate change response in the province and the country has a critical blindside and this showed during the 2022 floods as the sudden-onset event rattled the KZN for a month. It recommends that the province rethink its climate change and disaster management policies and strategies, such that they can have human security as a founding philosophy to build popular resilience in the province.

Keywords: Climate Change; human security; resilience; KwaZulu-Natal; 2022 provincial floods

Introduction

The South African Province of KwaZulu-Natal has been at the receiving end of climate-change-induced flooding over the past few years. This has led to a serious human security crisis in the Province, given the unwanted loss of lives, property, forced migration, and livelihood disruption the phenomenon has caused over the years (Presidential Climate Commission, 2022; Bouchard et al., 2023; Grab & Nash, 2023). The Province was hit by a devastating flood from April to May 2022. This has been described as arguably the worst in the Province's long history of floods. According to The Water Wheel (2022), the impacts of the floods were staggering, including the destruction of 8,548 houses, partial destruction of 13,536 houses, and submergence of 100 electrical substations, amid an estimated R25 Billion in infrastructure damage in the eThekwini Metropolitan Municipality. The KwaZulu-Natal Department of Economic Development, Tourism and Environmental Affairs (EDTEA), in the first anniversary of the floods, reported 443 deaths, with not least 48 lives unaccounted for. This is coupled with serious multi-sectoral effects across the province.

Climate change has risen to become a viable human security threat that negatively impacts the lives and livelihoods of people. The scientific affirmation of the incidence of the menace shows that the world will continue to face severe environmental crises with serious social, economic and political outcomes. In recent years, across the world, the impacts of climate change have become undeniable. According to the Intergovernmental Panel on Climate Change (IPCC), a body of scientists working on climate change and its impacts in its Sixth Assessment Report, notes that climate change has caused many 'substantial and increasingly irreversible losses' in the world's ecosystem (2023). This covers almost every aspect of human life as anthropogenic activities continue to impact the Earth's environment and resilience. The now frequent incidence of floods in KwaZulu-Natal finds expression in this development.

Olajide (2022) notes that climate change impacts are not mere environmental issues or challenges; rather, they are a complex mix of social, economic, and political impacts that can affect the development of countries, especially the developing ones. This reality is brought into perspective within the context of the 2022 floods by Kunguma (2023), noting that the 2022 KwaZulu-Natal floods brought about multifaceted resilience deficits to the people. The combination of the province's long history of floods and the worsening magnitude of climate change predisposes the province to human security challenges (Olajide, 2022; Grab & Nash, 2023). This portends that the lowering resilience of communities in KwaZulu-Natal will likely lead to worsening human security in which the environment, rather than providing a veritable ambience, turns into a security challenge, affecting many aspects of human life.

This paper argues that climate change-induced floods are producing human security challenges in KwaZulu-Natal, with the 2022 floods as a case study. This is because the 2022 floods exposed the social, economic, and infrastructure inadequacies of the province in ensuring the resilience of the communities against climate change impacts. The wanton loss of life, economic devastation, and ecological harm caused by the floods show that the absence of resilience is a serious environmental security challenge. Thus, this situation shows that there is a direct link between resilience and human security, and where the former is impacted by climate change, affected communities are in the throes of the latter. This resonates given Kwazulu-Natal's large number of lowly resilient communities and the high number of casualties among the historically disadvantaged members of these communities.

Literature Review

1. Climate Change and Human Security: Conceptual and Theoretical Discourse

Climate change is arguably the world's most existential threat in the world today (Mavuso et al, 2022). This submission is the result of the crystallisation of scientific and political efforts at addressing its drivers and impacts in the last three to four decades (Olajide, 2022). These efforts have demonstrated beyond doubt that climate change is driven by an unrelenting pattern of emitting and concentrating carbon in the atmosphere. This accumulation of greenhouse gases in the atmosphere then traps heat, which increases the average surface temperature of the Earth. This development then alters climate patterns of places in the world, such that adverse climate events are now a global regularity. This is why the United Nations Framework Convention for Climate Change (UNFCCC) as "change of climate that is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and that is in addition to natural climate variability observed over comparable periods" (UNFCCC, 2011:2).

More often than not, climate change issues are presented as environmental issues and challenges, however, they produce serious secondary impacts that are hampering the development and security of populations across the world (Olajide, 2022).

Nothing arguably signifies the shift in post-Cold War political thought than the emergence of the concept of human security. This is because the state-centric orientation and approach to security gave way to a new and revolutionary thinking. Hitherto, the core of security thought has been to protect the state from external and internal harm. However, the end of the Cold War brought a new political behaviour and thinking that prioritised the people above the state in security terms. This raises the question: who is to be secured, the state or the people? Therefore, human security takes a departure from state-centrism to people-centredness in

security thinking (Olajide et al, 2018). This means that the state should focus on the security of the people and that the old focus of state security is but a fraction of what security should entail. Therefore, human security is an attempt to unbundle the security threats facing the state, most of which are people-afflicting rather than state-afflicting.

Human security was developed by the United Nations Development Programme (UNDP) through its Human Development Report of 1994 that sought to cast an entirely new and nuanced perspective on the concept of security. Human security's logic is best described in its definition by the UNDP as "safety from chronic threats and protection from sudden hurtful disruptions in the patterns of daily life" (Dorn, 2025). Thus, human security has a broader focus and adopts a human-centred approach that recognises both violent and non-violent threats. State-centred security approach has focused on violent security threats to the neglect of the more complex non-violent threats. Given that state-centric focus on security had been unhelpful, the world moved away from it to a broader, more nuanced security orientation that situates the individual at the centre of security thought.

From the foregoing, human security is 'people-centred, multidimensional, interconnected and universal. This means it at once captures the erstwhile state-centric focus alongside other issues or threats that have long been submerged by the state and the international system at large. Hence, the UNDP unbundle security into a seven-fold conceptualisation that includes economic security, food security, health security, environmental security, personal security, community security and political security. These new conceptualisation of security aims to address threats more holistically and from a humanitarian perspective. Hence, old and emerging threats that had received adequate attention could be addressed.

2. Conceptual Framework

This paper is built on the conceptual framework that argues that resilience is security. This is to the extent that, given the broader mandate of the human security framework, the full leverage of the seven securities underscores resilience, which amounts to security. The importance of the conceptual stand is that climate change causes multiple security threats in society. This multiplicity resonates with the broad and nuanced conceptualisation of human security, which aims to ensure that man is not secure only in parts but can realise his full humanity and potential without being inhibited by threats that are, by all manifestations, security in nature. Thus, this paper maintains all the types of human security work in unison to ensure resilience and that a resilient individual or community is secure.

Holling (1973) posits that resilience "determines the persistence of relationships within a system and is a measure of the ability of these systems to absorb changes of state variables, driving variables, and parameters, and persist. In this definition, resilience is the property of the system and persistence or probability of extinction is the result" (p. 41). While the concept has undergone considerable change over the years, its central tenet still holds. This is that systems are adaptive and can rebound to pre-disruption reality with all its features remaining intact. According to Folke et al. (2010), resilience consists of three capabilities, which are: the ability of the system to change in response to long-term stressors, the ability to adapt as circumstances change, and the ability to absorb shocks.

Resilience means the ability of a system to perform essential tasks as it adapts to changing circumstances and, not necessarily going back to pre-crisis state. The ability of a system to withstand disruption and reorganise for change while maintaining essentially the same identity, structure, function, and feedback is known as resilience. Although it is linked to one facet of "ecological resilience," the concept of speed of return to equilibrium (Pimm, 1991) gives rise to what has been dubbed "engineering resilience" (Holling, 1996) and cannot be regarded as a measure of resilience.

Resilience is a function of many factors. In this sense, it is a functioning of the efficient achievement of the seven human security mandates. Insecurity ensues from escalated or poorly addressed threats, which demonstrates weak or no resilience. Therefore, resilience derives from a comprehensive or wholesome leveraging of all factors to ensure that people can live with sudden, disruptive events with minimal harm, swift and hassle-free adjustment to new realities, and effectively addressing the root cause(s) of the events. To this extent, resilience is a product of a synergistic leveraging of the seven pillars of human security and a pathway

to security. The framework is relevant to the discussion of the 2022 provincial floods in KwaZulu-Natal because it demonstrates the vulnerability of communities to human security issues. The multifaceted impacts of the floods show that they are not resilient, and this shows that they are insecure.

Methodology

This study is based on qualitative research design. This is because the study aimed to elicit meaning from both extant published works and primary data. The secondary data were sourced from extant works, including journal articles, books, government publications and gazettes, newspapers, and online sources. These data were supplemented by three interviewers to provide information on the aspects of the floods that the authors did not have readily available. A total five respondents were purposively interviewed in the study through key informant interview (KII) because of the weak coverage of the areas that affected their respective groups during the floods. The data collected was analysed content analysed to fit into the seven human security theme as they played out during the floods and its aftermath.

The Findings

The environmental and climatic history of the Province of KwaZulu-Natal shows that it has always been in the throes of adverse environmental events, including floods of devastating proportions (Kataneksza, et al, 2012; Olajide, 2022). The location of the Province on the east coast of the South African territory predisposes it to extreme weather events. Grab & Nash (2023), in their environmental history of KwaZulu-Natal, note that the province has historically experienced flooding. The Greater Durban Region is worse off, as records show that it has experienced a high number of floods throughout history. From available missionary documents and other archival records, the province experienced 53 major flood events between 1850 and 1889, while it experienced 210 such events between 1900 and 2022. This portends a more frequent trend in floods over the last century, with successive events turning out worse than their predecessors (Grab & Nash, 2023).

The flood situation in recent years supports this foregoing historical claim. The storm code-named Doimona in 1984 affected KwaZulu-Natal, among other places in South Africa, raising the Pongolapoort Dam to 87% capacity in a situation that could lead to the dam's failure, with wanton human, material, and environmental costs. Similarly, the 1987 floods in the area (Sithole, 2016). Bell (1994), cited in Olajide (2022), notes that 380 lives were lost in the 1987 floods in the area, with an economic impact of R600 million. In 2016, suburbs of the eThekwini Metropolitan Municipality, including Chatsworth, Umlazi, and Isipingo, experienced massive floods that destroyed 85 homes and displaced 386 people (Ryan, 2016).

The main driver of the worsening incidence of floods in KwaZulu-Natal has been narrowed to climate change. Studies such as Olajide (2022), Ngcamu (2022), Bouchard et al. (2023), Thinane et al. (2023), and Dlamini, Nhleko & Ubisi (2024) have shown that recent floods in the province have been induced by climate change. This resonates with the position of Grab & Nash (2023) that the incidence and magnitude of floods in KwaZulu-Natal drastically increased over the last century. This position also agrees with science-derived conclusions and warnings about the steep rise in global warming since the middle of the 19th century, leading to climate change. Olajide (2022) notes that environmental parameters and events since this period have led to haphazard, negative, and costly patterns, including the flood phenomenon in KwaZulu-Natal. Given its vulnerability and the coincidence of geographical location, the province is vulnerable to floods. This situation has telling human, economic, social, and environmental impacts on the Province.

The 2022 floods in KwaZulu-Natal cannot be divorced from climate change. Grab & Nash (2023) and Bouchard et al. (2023) particularly established this causation. Ndlovu (2022) also notes that the April-May 2022 KwaZulu-Natal floods were caused by climate change, positing that experts narrowed the cause of the floods to climate change. Similarly, the South African Presidential Climate Commission (PCC) classified the 2022 floods as caused by climate change (KZN EDTEA, 2023). To this end, it is apposite to state that KwaZulu-Natal has been at the receiving end of the hydrological imbalances caused by climate change. This is because it has changed patterns of rainfall in terms of both onset and cessation, causing massive disruptions in the province, especially along the province's 580km coastline (Olajide, 2022).

The 2022 KwaZulu-Natal floods will go down in history as one of the province's and South Africa's floods in terms of human and other costs. Scientifically, the La Niña phenomenon, in which there are cooler-than-usual temperatures in parts of the Pacific Ocean, caused South Africa and some other places around the world to experience wetter conditions (Cele & Njini, 2022; Hattingh, 2022). This situation to more rain in South Africa and KwaZulu-Natal in particular. According to the PCC, record-breaking rainfalls fell in Durban from April 8-12, 2022, affecting e-Thekwini, iLembe, and Ugu Municipalities (PCC, 2022). Within this period, Durban received 300mm of rainfall in one day, which is 75% of South Africa's annual rainfall (Bouchard et al., 2023). The massive rainfall could be put into perspective by comparing it with the former rainfall records. Grab & Nash (2023) note that Virginia in Durban received a record-breaking rainfall of 351mm over 24 hours during this period. This was more than double the previous 165mm of rainfall in the area in 2019.

The foregoing situation led to massive floods in the Durban area and some other parts of KwaZulu-Natal. 18 river courses, such as Amanzimtoti, Ubilo, and Umgeni, overflowed, thereby causing widespread damage to human settlements in the Durban area (PCC, 2022). This led to the declaration of a State of Disaster by President Ramaphosa on April 18, 2022, following the massive damage and the wanton number of deaths, disappearances, and unconscionable economic loss in the province (Ajohdia & Makhanya, 2025). As disaster recovery efforts were being mounted by the authors and other stakeholders, the record rains were followed by a storm that affected King Cetshwayo, iLembe, and Zululand Districts (PCC, 2022). This compounded the already messy situation in the province and led to more losses and damages. In terms of impact, UNICEF notes that the 2022 floods were one of the deadliest in South Africa since 1987, given the 435 confirmed deaths in the event (Ajohdia & Makhanya, 2025). Bouchard paints a more vivid picture of the impacts of the 2022 KwaZulu-Natal floods as presented in Figure I below;

Table 1. Impacts of the 2022 KwaZulu-Natal Floods

Impact	Number
Fatalities	435
People missing	54
Houses affected	17, 438
People left homeless	6, 278
People living in shelters after homes destroyed	7, 245
Damages to rail infrastructure	R995.4 million (South African Rand)
Water and sanitation infrastructure	R1 billion
Overall damages	R17 billion
SMME's affected	110 (R20 million)
Damages to the manufacturing sector	R431 million
Warehousing and logistics sector	R33.5 million
Construction sector	R18.1 million

Source: Bouchard et al. (2023:236)

Ajohdia & Makhanya (2025) also note that the floods affected 13,500 households, thereby causing a widespread humanitarian crisis in the province. KZN EDTEA (2023) reported that the floods caused massive infrastructure damage, including roads, schools, health centres, livelihood disruptions, and an unprecedented level of displacement. Kunguma (2023) also notes that beyond the well-reported impacts of the floods, it also

led to civil unrest, as there were protests attributed to disruptions that caused a lack of services, such as access to water and electricity in the affected areas.

Discussion

The 2022 floods foisted massive human and material costs on the Province of KwaZulu-Natal following the unprecedented record of rainfall. The event exposed the lack of or low resilience of the individuals and communities across the province and subjected them to multidimensional security threats. Taken from a human security perspective, the human and material costs of the 2022 floods in KwaZulu-Natal show that there is widespread insecurity in the province. Despite some impressive history of climate change response in the province and South Africa (Louis et al, 2019; Olajide, 2022), existing strategies were proven inadequate in ensuring individual and community resilience, and to this, the record-breaking rains subjected the people to wanton loss and damage. This shattered members of the affected communities, causing fear and hopelessness among many households (Ajohdia & Makhanya, 2025). The situation disrupted their human security and denied them of their 'freedom from fear' and 'freedom from want' (Olajideet al, 2018). To this end, this section engages in the human security analysis of the floods to demonstrate the absence of or weak resilience in the province.

1. Economic Security

The 2022 floods in KwaZulu-Natal breached the economic security of the individuals and communities across the province. This is because events register as the most economically damaging environmental event in KwaZulu-Natal and arguably in South Africa. Given the R25 billion infrastructure damage that affected the different sectors of the provincial economy, the economy of many businesses and homes became comatose. Durban Edge (2022) notes that the floods cause a 1.5%-1.8% drop in the provincial economy. The import of this is that many homes were plunged became poorer because their business came to a halt. Bouchard et al. (2023) note a multi-billion Rand multisectoral damage caused by the floods, which made many businesses close for months. Key sectors of the economy, including logistics and the vast supply chain sector, were badly affected (Durban Edge 2022; Bouchard et al., 2023).

It is of note that the majority of businesses in South Africa were not resilient. Many businesses could not recover easily and on time from the floods because the majority of them did not have the wherewithal to do so. A paltry 24% of these businesses have comprehensive insurance that can help them to recover in the immediate post-flood period. It is also noteworthy that 52% of the people interviewed by Durban Edge noted that they have no insurance to help them recover from the disaster. This situation made it difficult for businesses and individuals to recover immediately after the floods. It situation also speaks to the unimpressive financial inclusion situation in the province, especially among black South Africans, as many individuals were economically hopeless and helpless in the aftermath of the event.

2. Food Security

The 2022 floods threatened KwaZulu-Natal's food security as a significant portion of the agricultural land of about 9,152 ha was flooded, with different kinds of crops destroyed (Food and Agriculture Organisation, 2022). Hence, normal agricultural processes could not occur during this period, stretching the agricultural sector supply chain. Large farms, including orchards, pineapple, sugar cane, and various other food types, were swept off by the floods. The Food Beverages Manufacturing Sector Education and Training (FoodBev SETA, 2023) notes that the floods affected KwaZulu-Natal's agricultural and allied sectors as they severely damaged crops, farmlands, and agricultural infrastructure. It affected 35% of the province's food processing sector, stifling the production process of staple food items such as sugar, fruit, milk, and poultry (FoodBev SETA, 2023). The floods affected 826 agricultural and food processing companies with a cost implication of about R7 billion (FoodBev SETA, 2023). The 2022 floods demonstrate the poor resilience in the KwaZulu-Natal agricultural and allied sectors. While established farmers were affected, the situation of small-scale farmers was dire (Amusan et al , 2023). Chief among this population are women farmers whose resilience had already been affected by the patriarchal and even the historical exclusionary policy of apartheid. SB Morgen

Intelligence (2022) ranks South Africa among the countries with poor resilience in agriculture, and it is vulnerable to flooding, and the situation in KwaZulu-Natal typifies this. Hence, the floods induced food security threats in the province, with more people lacking access to quality, nutritious food that can positively impact their well-being.

3. Health Security

Climate change is a direct attack on health security in the world. The 2022 provincial floods demonstrated this by disrupting the healthcare system of KwaZulu-Natal. The floods damage healthcare facilities across the province. The Department of Health of South Africa announced that it had affected 23 hospitals, 34 clinics, 3 Community Health Centres, and five office buildings in the eThekwini, Ugu, Ilembe, uMgungudlovu, King Cetshwayo, and uMkhanyakude Districts of the province with a cost implication of about R187 million (RSA Department of Health, 2022). This situation stressed healthcare delivery during the period. The extensive infrastructure damage, such as roads and other essential services, affected the ability of many victims to access healthcare facilities, possibly leading to fatalities (Naidoo et al, 2022). The floods also caused infectious diseases as inundation allowed for the breeding of disease vectors. The Presidential Climate Commission notes the outbreak of waterborne and waste-borne diseases across the affected communities (PCC, 2022). The floods also caused widespread mental health challenges in the province. The Psychological Society of South Africa points to the possibility of a long-term grapple with the healthcare stress caused by the floods (Psychological Society of South Africa, 2022). The sudden eruption of emergency needs and the substantially ineffective medical emergency provision shows that KwaZulu-Natal's healthcare system is not resilient to climate change.

4. Environmental Security

The environmental damage caused by the 2022 provincial floods is staggering. The floods caused soil erosion and bank erosion, landslides, and vegetation destruction (KZN EDTEA, 2022). Grab & Nash (2023) note that much of the environmental damage or problems caused by the floods are secondary natural disasters. This is because they are a product of the primary natural disaster, which was the floods. These include mudflows and sedimentation. It also led to the water system contamination across the province because the sewage system was inundated and damaged. Thus, this and other industrial and other waste ran off into the rivers and made the waters unusable for domestic and other uses. The KZN EDTEA (2023) notes that this situation led to environmental stress for flora and fauna as biodiversity services in the affected areas and their proximities became a problem. Another environmental impact of the floods was the high volume of plastic waste and other pollutants being washed off rivers into the ocean (EDTEA KZN, 2023). Generally, the event is projected to have long-term adverse environmental and biodiversity impacts on the province. The event portends serious environmental security threats to the people. This is because the biodiversity of the affected communities was severely damaged, affecting multiple sectors and the normal flow of life.

5. Personal Security

Personal security is a cardinal human security pillar that ensures that individuals are kept from all forms of physical violence and threats to individual safety. The 2022 floods showed that there is low resilience to personal security threats in KwaZulu-Natal, given the record loss and damage caused by the event. The floods compromised the personal safety of individuals, leading to many deaths and disappearances. Thus, many homes lost loved ones, and this was a most difficult situation for them. The torrential rains also destroyed as many as 17,483 houses in the affected areas (Bouchard et al., 2023). Other personal effects lost in the event include vehicles and other property worth billions of Rands. This situation speaks to the absence of popular resilience in KwaZulu-Natal, as the majority of homes in the affected communities suffered wanton personal losses. Hence, the floods breached their security and thrust them into some prolonged, unsafe situation. The situation led to the forced displacement of the affected people into makeshift homes, often with unsanitary and unsatisfactory conditions that further drove many into other human security crises.

6. Community Security

Many communities in six Municipality Districts were affected by the 2022 KwaZulu-Natal provincial floods. Hence, the event had serious adverse effects on community security in the province. It is apposite that the torrential floods struck these communities and made them unsafe to live in. Thus, many communities were forced to lose their identities and their social networks that help them to operate. This is because their members had been forced to move from humanitarian shelters, and the communities experienced desertion. For example, the extensive destruction of infrastructure and the total service provision failure, coupled with the many homes that were damaged in Tongaat (PCC, 2022), meant that the majority of its residents had to seek shelter during the pendency of the floods.

7. Political Security

The political leadership offered by the provincial and national governments during the floods was tardy. This can be inferred from the rather late declaration of a state of disaster by President Ramaphosa, a week into the crisis. This hallmarks the delayed disaster response that characterised the floods (South African Government, 2022). There were also issues of coordination as government agencies and relevant stakeholders worked largely in silos, thereby affecting overall effective the disaster response (RSA Department of Planning, Monitoring and Evaluation, 2023). The rate of insecurity heightened during the flooding and its aftermath, thereby stretching the capacity of security institutions to handle the situation effectively, as opportunistic crimes increased in number. The management and administration of the flood disaster were accused of corruption. The allegations of corruption were rife, and it marred citizens' perception of the process as being fair and equitable. There were allegations of diversion of relief food items and other materials by officials. The damage limitation effort by the province's Premier Sihle Zikalala did little to dampen this perception (Erasmus, 2022; Singh, 2022). There was some substantiation of the allegations as the office of the Auditor-General of South Africa flagged many instances of possible corruption in the tenders submitted for the rebuilding of state-owned properties damaged by the floods (Democratic Alternative, 2022). The unavoidably poor provision of services such as electricity and water, among other public misgivings, led to public unrest during the period, as disgruntled citizens started protesting and looting (Kunguma, 2022).

Many lessons can be gleaned from the 2022 provincial floods in KwaZulu-Natal. First, while the province has a decent history of climate change response, the floods and their handling show that it was inadequately prepared for the event. The fact that it was a sudden-onset event speaks to the need for a new form or level of disaster preparedness in the province, as the disaster response was ineffective. This is coupled with governance failures leading to allegations of corruption and unnecessary politicking when many lives had been lost, livelihoods, property, and infrastructure had been severely damaged. There are structural vulnerabilities that are deeply rooted in history that accounted for a significant part of the loss and damage in the 2022 floods. Apartheid era spatial planning predisposed many communities and informal settlements to vulnerability and the high-level loss and damage they experienced from the event (Mlaba & Mhlungu, 2022). Lastly, climate change is a reality that everybody must be prepared to live with because its pressures will continue to mount until its drivers are effectively addressed.

The government needs to improve its overall climate and disaster management by ramping up its governance and institutional capacity to address possible future occurrences. This will enable it to have a prepared and effective decentralised disaster response management, such that high-risk municipalities can play active roles in future disaster management efforts. There is also a need to develop a multi-stakeholder approach to disaster management, involving government at all levels, their institutions, traditional authorities, civil society and the private sector. This will bring about the all-hands-on-deck approach to responding to future climate events. Efforts must be implemented to ensure a transparent and accountable administration of relief efforts in future circumstances. The perception of corruption that tainted the 2022 efforts created a trust deficit for the government and other stakeholders, leading to protests and other violent activities.

KwaZulu-Natal has a demonstrably slow transition to developing climate-resilience infrastructure on a popular scale (World Economic Forum, 2023). Hence, the province must speed this transition to ensure that programmes such as nature-based solutions are implemented towards the recovery of climate-battered mangroves and wetlands along the province's 580km coastline. Secondly, the province must invest massively in flood-resistant infrastructure and durable housing. The province must also enhance the schools and healthcare facilities to withstand floods in the future. Government and stakeholders must also improve on waste management as its failure allowed debris to escape into the ocean and rivers, a situation that is threatening to ecosystem and biodiversity of waterbodies. Hence, there must emerge a much improved waste collection and recycling process and facilities across KwaZulu-Natal in the future.

Communities are critical to effective disaster response in the future. Hence, KwaZulu-Natal must empower communities to act as first responders. This is because communities have the necessary ties, trust and social capital for such sensitive operations. It can be seen that the affected communities lack this orientation, and the manner of their displacement, and the ineffective community management of the floods and relocation efforts contributed to the high number of casualties and disappearances. This will help to develop context-specific community-led early warning systems and more effective disaster communication, such as SMS in isiZulu and the training of local volunteers to be prepared in case of similar events in the future. Finally, it will help in leveraging local resource mobilisation to help members during disaster and help build community support that can help to address mental health and collective trauma management through cultural practices, such as the Ukubusiya ceremony for collective mourning.

Technology is critical to ensuring an effective climate change response and disaster management. The government must take advantage of the affordances of Artificial Intelligence and satellite data to enhance the accuracy of predicting climate events. Though it predicted the 2022 floods, the continuous adoption of the latest technologies will ensure more predictive accuracy in the future. The province can also develop a Flood Risk Atlas detailing hazard zones and evacuation routes in the future. Furthermore, there must be investment and commitment to greater real-time monitoring with activities such as the deployment of drones and GIS mapping for effective damage monitoring, and tracking pollution spills, among other relevant activities. Lastly, enhancing digital inclusion will help in getting disaster alerts in marginalised and remote communities in the province.

KwaZulu-Natal and indeed, the rest of South Africa, should address systemic and structural inequalities that haunted the province in the wake of the 2022 floods. There is a need for equitable resource allocation that prioritises marginalised populations and communities. There should also be a targeted response for vulnerable groups, including women, children, the physically challenged, the elderly, and migrants, such that they can be safe and resilient in the event of future climate events. This also speaks to ensuring universal medical aid coverage to all citizens, such diseases from the 2022 and future events can be treated, thereby preventing unnecessary deaths from such events.

The province must leverage regional and global partnerships to ensure it can respond to climate change and its impacts effectively, going forward. This will help the province mainly in the area of climate finance, including the recently internationally adopted loss and damage fund (Olajide, 2023). The province must also attract more targeted financing to cater to its specific climate needs. The government of KwaZulu-Natal must commit to implementing best leveraging broad-based partnerships within and outside South Africa, including subnational governments with similar vulnerabilities to flooding for water management and community resilience. It must also ensure that businesses in the province buy into its climate ambitions by adhering to Environmental Social Governance (ESG) practices in their activities.

Conclusion

Climate change is real and a reality in the Province of KwaZulu-Natal of South Africa. The province experienced one of the worst impacts of the menace during the April-May 2022 floods, claiming hundreds of lives, disrupting livelihoods, and extensively damaging infrastructure. These biting, multidimensional impacts of the floods show that there is no popular resilience to climate change and its impacts. This gave rise to a complex of human security issues that have immediate, medium- and long-term impacts. While the province

has acted commendably by developing and implementing some climate change response policies and strategies, the 2022 event showed that these are inadequate and ineffective (Olajide, 2022). The nature of the floods as a sudden onset event shows that there are many blind spots in climate change and disaster management planning in the province. To this end, the 2022 floods show that there is multidimensional insecurity in KwaZulu-Natal arising from the weak or absence of resilience in the communities.

A worrying fact is that the province has a long history of floods, but seems to go to sleep once each episode has passed. The floods question the disaster preparedness structure and processes in the province and link to policy failure and what Francis Engelbrecht refers to as a lack of 'disaster collective memory' in the province (Grab & Nash, 2023). This explains the failure to build inclusive resilience to climate change, which in turn subjects individuals and communities to security threats. Resilience speaks to the ability of a system to adapt in line with changing circumstances and to recover its features without loss from the disruption. These hallmarks of security demonstrate that the features and properties of the system are secure despite the disruptions.

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