

Why are floods in South Africa's KwaZulu-Natal so devastating? Urban planning expert explains

January 19 2024, by Hope Magidimisha-Chipungu



The April 2022 floods in KwaZulu-Natal were the worst natural disaster recorded in the province. Credit: SA Government

The devastation caused by the [recent floods](#) in KwaZulu-Natal, South Africa demonstrates again that the country is not moving fast enough to adopt appropriate urban planning. It should be integrating risk assessment and management in the design and development of cities. This is becoming more urgent as the frequency of floods increases.

Most South African cities were built a long time ago, before climate change was predicted. KwaZulu-Natal experienced flooding in July 2016, May 2017, October 2017, March 2019, April 2019, November 2019, November 2020, April 2023, June 2023, and now in January 2024. South Africa has a comprehensive [national climate change adaptation strategy](#), and the authorities are aware of [flood damage](#), but are [not able to keep up](#) with the repairs.

[I recently edited a book on inclusive cities](#) in which I write about the way South Africa has dealt with natural disasters. There is a lack of risk-informed urban planning. This is an approach to designing and developing urban areas with risk in mind. It aims to create resilient cities that can withstand and adapt to various hazards and challenges, such as natural disasters, climate change and social vulnerabilities.

Cities are not resilient

The devastation caused by the recent floods indicates lack of resilience and increasing social vulnerabilities. More than [45 people have died in the last two months](#); more than 250 homes have been severely damaged. Severe flooding and landslides caused by heavy rainfall caused [the deaths of at least 459 people in April 2022](#). These floods displaced over 40,000 people, destroyed over 12,000 houses, and left 45,000 people temporarily unemployed.

The cost of infrastructure and business losses amounted to about US\$2 billion. It was one of the worst flooding events in KwaZulu-Natal's recorded history and eThekweni (Durban) was the worst affected [city](#) in the province.

Climate change means more floods are coming

[Studies and scientific evidence](#) have pointed to one significant factor contributing to the occurrence of [severe flooding](#): climate change. 2023 was the [hottest year ever recorded](#). The concentration of carbon emissions in the atmosphere has resulted in drastic shifts in weather patterns, leading to increased rainfall in places and subsequent floods.

In KwaZulu-Natal, the failure to practice risk-informed urban planning has left the province's roads and buildings, often poorly designed, crumbling. The authorities have failed to maintain drainage systems. They have not put in place [flood](#) control measures, such as river channelisation. This is where rivers are dredged, widened and deepened to improve their flow capacity and reduce the risk of flooding.

Flood retention basins, designed to temporarily store excess water during heavy rainfall or flooding events, would also reduce the risk of downstream flooding. Neglecting to put these measures in place contributes to severe flooding and endangers the safety of communities.

Inadequate waste collection and inappropriate disposal of garbage also blocks the drains, worsening the impact of heavy rainfall. Poor drainage systems are clogged with plastic pollution. Robust waste management systems are needed to ensure that water flows properly through these drains.

In some cases, inappropriate land use and the unchecked expansion of urban areas into flood-prone zones have resulted in increased vulnerability to extreme weather. Strong enforcement of [land use policies](#) that restrict development in high-risk areas is essential. Municipalities such as the disaster-hit city of eThekweni in KwaZulu-Natal must not allow people to build in flood-prone areas, because once people settle in an area it becomes expensive to relocate them.

What are the solutions?

Frequent flooding in KwaZulu-Natal will be the new reality. The province urgently needs a comprehensive approach, one that involves the local community in decision-making around [urban planning](#) and climate change mitigation. An inclusive approach would recognize local knowledge and encourage innovative solutions suitable for the area.

Prioritizing mixed-use development, density, and the preservation of green spaces in city zoning and land-use regulations is essential. Urban sprawl must be curbed. The government must establish compact, walkable neighborhoods that are not constructed on floodplains, coastal zones, or low-lying areas. By recognizing areas of high risk, the damage caused by flooding can be minimized.

Water-sensitive urban design must be encouraged as soon as possible. This includes green roofs and permeable pavements, which allow water to pass through the surface layer and be stored or infiltrated into the underlying soil layers.

More parks, urban forests and other green spaces must be established in cities and towns. They serve as carbon sinks: places that store carbon dioxide, acting as natural reservoirs, and regulating the balance of greenhouse gases. Wetlands, riparian zones and forests must be preserved because they can act as natural buffers against flooding, absorbing excess water and reducing the impact on nearby [urban areas](#).

Developing an efficient network of stormwater drains, sewers and retention ponds to control the flow of water during [heavy rainfall](#) events is vital. This infrastructure should be regularly maintained and updated.

The province needs to move towards [climate change](#) adaptation. Public awareness and education campaigns on the importance of flood-resistant measures will foster a sense of responsibility in preventing flooding.

The authorities must collaborate with other cities that face similar problems. [Nations like Japan](#), which efficiently manages [natural disasters](#), offer useful examples we could follow.

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