

Tropical Cyclone Idai

Lessons learned and the way forward for Africa Alliance for Disaster Research Institutions (AADRI)

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Several months have passed since Tropical Cyclone Idai hit Zimbabwe and leaving behind a trail of destruction and casualties unprecedented of any natural disaster in Zimbabwe or even in southern Africa's modern history. The number of those dead and the devastation it inflicted on property and the environment was far more than what the cyclone caused in Mozambique where it made landfall when it still retained much higher destructive power from the Indian Ocean. Then what could be the reason that exposed our nation to such a precarious state to this cyclone? Media and various platforms proposed many theories, stories have been told both of natural and supernatural nature to try to explain the possible causes which led to this catastrophe. The human's most sharpened talent of apportioning blame whilst proffering little or no solution was also not spared. However, what is important to the people of Chimanimani and Zimbabwe at large is to remove the fear that this calamity might happen again in future. The most essential undertaking at this juncture is to systematically extract lessons from the cyclone's impacts that can catapult us to a state where we can live in harmony with this natural hazard while harnessing the 'positives' and reducing the associated risks. Though not exhaustive, here we examine the lessons which could be derived from Cyclone Idai's extraordinary impact before examining the way forward from a national action research perspective under the banner of the Africa Alliance for Disaster Research Institutions (AADRI).

Physical Vulnerabilities associated with Tropical Cyclone Idai

The tropical cyclone made landfall over the Mozambique coast, more than 200km away from the eastern border with Zimbabwe, on the 14th of March 2019, before slowly moving to hit Chimanimani at about 7:00 pm the following day on Friday. As expected with tropical cyclones when they make land fall, their potential destructive force in terms wind speed and amount of deposited rainfall is severely curtailed as it moves inland due to decrease in 'fuel input to the cyclone engine'. The enhanced smoothness and evaporation from the sea surface waters offer conducive environment for the cyclone to increase in strength while the land surface friction and reduced surface evaporation from the relatively dry land tend

to suffocate the cyclone thereby killing it gradually. But despite more lead time to prepare for the cyclone and reduced force of potential damage we still see that Mozambique had far less casualties, environmental and infrastructure destruction than Zimbabwe. The possible factors which can be attributed to this rather unfortunate scenario is the level of disaster preparedness of Zimbabwe, the fragile environment that was offered by the predominant mountainous landscape and the relatively slow speed of the cyclone which enabled it to damp a lot of rainfall per unit time. This could have been compounded by the time when the disaster came, which was in the dark of the night hence reducing visibility to assess evacuation options for the victims and, severely limited the search and rescue processes.

The general Preparedness and the issuing of the Tropical Cyclone Warning

The number of people affected by a hazard are in direct proportion to the preparedness of the community to the impending disaster. If I may quote from one of the victims, *"No one knows where this water came from, it took us by surprise"*, clearly testifies to the fact that most of the communities affected had not been fore warned about the impending floods. While the Meteorological Services can be applauded for having given the warning a least 2 days before the cyclone, can we learn something from how the forecast was issued. My few lessons on disaster warnings which I had some decades back tells me that when one is more confident of an impending disaster, the frequency of the warnings should not only be increased with time but also updated to suit the changing circumstances as the hazard characteristics unfold. We are told that that the Met Office stuck to their 8:00 pm News slot to disseminate the warning instead of soliciting for more slots both on the TV and radio to conscientize the people of the impending disaster. At the same time, the TV and radio could also have allowed unscheduled warnings to be flighted. Unless the Met Forecasters themselves were not sure of the magnitude of the expected cyclone impact, I am confident that the more they had exposed the people to the warnings by increasing the issuing frequency and updates, the more they were going to be taken more seriously by the related stakeholders responsible for evacuating the communities who were at risk. On the other hand, even if a warning is issued timeously and, with the required frequency and mode of dissemination which reaches down to the communities, these people also need to know what to do when a warning has been issued. Their prior coordinated response is key to ensure predictable community behavior when the hazard strikes. It is a welcome development that Chimanimani Rural District Council is one of the few districts in the country to have adopted the District Climate Change and Watershed Management Policy. But were the local communities trained on what to do when flood warnings are issued? At the same time, evacuation needs resources both to carry out the process and providing safe havens, endowed with food and other necessities. Were these readily available to execute the process? We understand that the contents of the tropical cyclone warning itself advised people to move to high ground. Was this the correct advice to give to Chimanimani in the face of rock and mudslides which made these high places riskier, especially that the disaster struck at night when most people were indoors and preparing to sleep? These are some of the preparedness questions we need to ask ourselves as we take introspect of the lessons derived from the Tropical Cyclone Idai preparedness and warning.

Fragility and Vulnerability of Settlements in the Mountainous Environment of Chimanimani.

Tropical Cyclone Idai brought to the fore the high degree of exposure of settlements and how fragile the mountainous environments are. The cyclone came after the region has been exposed to a prolonged drought which removed the capacity of the vegetation left to hold the soil intact. The accelerated land degradation and frequent fires which characterize periods of drought removed vegetation and hence limited root depths, thereby increasing the landslide hazard. It was then easy for the loose waterlogged soil to flow downslope and with it, imbedded rocks which then choked the normal flow of the water thereby exacerbating the flooding spatial extent and intensity. As such, the blocked rivers reopened old paths which had for the past decades been converted to settlements. A case in point is the Kopa Business Center which was raised to the ground and leaving behind little or no shred of evidence that buildings, with thriving businesses, were once predominant in the area as the river repossessed its former route. This means that old river paths remain unsafe for settlements as at some point in time the river may still rejuvenate its former paths. Therefore, careful planning for resettlement sites needs to take into consideration the possibility of changing river course characteristics. On the other hand, the prevailing superstitions surrounding the presence of the large rock boulders which were left in the river channels by the flowing mud from the mountain slopes owes a scientific explanation. It was the large and uneven multi-tone rocks which were hitting against the slope surfaces as they were rolling downslope which were wrongly interpreted as an earthquake that accompanied the tropical cyclone. This was corroborated by the Meteorological Services which confirmed not recording any seismic activity in the area during the cyclone. Explaining this phenomenon to the affected communities assists in focusing on the real causes whilst getting rid of superstitious beliefs which usually lead to wrong attribution to the causes of the disaster. Dwelling on superstitious beliefs has the danger of diverting the community's attention to immaterial answers rather than providing implementable scientifically backed solutions.

The way Forward under AADRI

With the advent of climate change, tropical cyclones are not going 'anywhere', rather they are poised to become more frequent and accompanied by increased intensity. In this regard, it is invertible that we find ways to live with them whilst preventing the metamorphosis process from being just a mere meteorological hazard to becoming an unmanageable national disaster. This is 'doable' as Islands like Mauritius that lie in the path of more intense tropical cyclones and are hit directly more than once in every cyclone season, are now nearing the zero target casualty. At the same time, it is more than welcome that the general shock from the devastating impacts of Tropical Cyclone Idai have once again united the nation through unprecedented donations towards the victims' recovery. It has also spontaneously given birth to a strong desire from national disaster research institutions, to learn from this disaster in the bid to understand why this phenomenon happened with such dire consequences.

In research terms, Chimanimani provides a conducive operational background and a well defined geographical area, which could provide for feasible action orientated research that could inform policy and action in other areas within Zimbabwe and beyond. The fact that the region has all the five Agroecological Regions of the country makes the results derived from the research to be relevantly replicated in any other part of the country. In this regard, Bindura University of Science Education under AADRI with its vast experience in disaster risk reduction research is coordinating a consortium of other state universities to properly document, in a scientifically informed way, the lessons learnt from tropical Cyclone Idai. This national action orientated research, which is yet to source for funding, is poised to pave way for a future situation that would allow the communities within Zimbabwe to be better prepared and become more resilient in the face of potentially recurring Climate Change related events such as Cyclone Idai. The strategy is to ride upon the shock that is currently vividly present within Zimbabwe and beyond to bring sustainable policy initiatives and practices in view of various interests that could provide for learning and dedicated action in Chimanimani and other nationally comparable situations. The objective of the research is to 'Build National Resilience to Tropical Cyclones through deriving lesson from Tropical Cyclone Idai'. Preliminary work to enable scouting for solid funding for this noble action research was conducted at a workshop in Harare that was facilitated by TSURO Trust, a community-based NGO in Chimanimani that was actively involved in Cyclone Idai relief and recovery.



The once thriving Kopa Business Centre that was completely destroyed by Cyclone Idai



Large boulders and mud that was carried downslope and destroying houses in their path during Cyclone Idai.