

EXECUTIVE SUMMARY

Learning from 2019 Cyclone Idai and Cyclone Kenneth Malawi, Mozambique, and Zimbabwe



Community clean up campaigns in the aftermath of Cyclone Idai © IFRC

Executive Summary



This summary is based on a Zurich Flood Resilience Alliance (the Alliance) Post Event Review Capability (PERC) study analyzing the 2019 Cyclone Idai and Cyclone Kenneth impacts in Malawi, Mozambique, and Zimbabwe. The study was developed by the Institute for Social and Environmental Transition - International (ISET), together with other members of the Alliance - the International Federation of Red Cross and Red Crescent Societies (IFRC), Practical Action, and Zurich Insurance Group - and in collaboration with the Mozambique Red Cross and the Swiss Agency for Development and Cooperation (SDC). It focuses on why cyclones Idai and Kenneth resulted in disasters in Malawi, Mozambique, and Zimbabwe, taking into account the specific country contexts. It draws on 5 weeks of field work¹, 100+ interviews with stakeholders from government, UN agencies, donors, NGOs and humanitarian response agencies, academics, and community members, and the review of over 100 secondary sources to highlight key opportunities for building resilience. These opportunities include strengthening early warning systems and climate services coupled with capacity building and resourcing for early action, supporting the construction of resistant homes, connecting water, sanitation, and hygiene (WASH) and Disaster Risk Reduction (DRR) efforts, and through supporting the diversification of farming practices and crops.

In March and April of 2019, Tropical Cyclones Idai and Kenneth made landfall in central Mozambique. Cyclone Idai was the most devastating cyclone on record to hit Africa and the second-deadliest storm in the southern hemisphere, exceeded only by Cyclone Flores, which hit Indonesia in 1973. A month later cyclone Kenneth made landfall just north of Pemba, Mozambique as the strongest cyclone (in terms of windspeed, 220 km/h) to ever

make landfall on the African continent². Idai and Kenneth resulted in major humanitarian disasters in southern Malawi and some parts of central Malawi, central and northern Mozambique, and eastern Zimbabwe. High winds, severe flooding, and landslides caused over \$2 billion in damages and destruction to homes, critical infrastructure and agriculture, impacted over 3 million people, and caused over 1,300 deaths across all three countries, with many individuals still missing³.

The cyclones occurred in countries already facing challenges from recurring floods and droughts, ongoing economic instability, conflicts, non-resistant building construction, poorly maintained and protected structures and assets, and societies heavily reliant on subsistence agriculture. These socioeconomic, development, and environment challenges created conditions that made the severity of the impacts from Idai and Kenneth far more extreme and underscore the need for a much greater focus on disaster risk reduction (DRR) in all three countries. Given these vulnerabilities and the escalating hazard risk posed by climate change, there is an increasing and critical need to learn from what happened during these events and to use both the successes and challenges as entry points to guide more sustainable investment and DRR engagement. Doing so can help to ensure that not only do communities and governments reduce their risk to future events, save lives, and protect livelihoods, but that, in collaboration with humanitarian actors and donors, work is done as efficiently and effectively as possible.

1 Researchers conducted field work in Chikwawa and Nsanje, Malawi; Chimanimani and Mutasa, Zimbabwe; and Beira, Buzi, and Maputo, Mozambique.

2 Government of Mozambique. (May 2019). *Mozambique Cyclone Idai Post Disaster Needs Assessment*.

3 O'Rourke, Megan. (2019). *Year in Risk 2019*. Risk Management. <http://www.rmmagazine.com/2019/12/02/year-in-risk-2019/>

Key lessons and learning

Malawi, Mozambique, and Zimbabwe are all familiar with disasters and there has been significant investment over the past several decades in weather forecasting and disaster management, particularly response. Interviewees in all three countries reflected on these investments, outlining clear successes that prevented wind and flood impacts from being even more costly and deadly. The creation and strengthening of disaster management institutions in Mozambique and Malawi, for example, led to better coordination in the lead up and immediate response to the cyclones, facilitating the allocation of resources and post-disaster assessments. While flooding forecasts remain a challenge, increased forecasting accuracy has improved early warning capacity, with authorities in all three countries able to disseminate warning about the cyclones several days in advance of landfall. Additionally, there were clear successes in all three countries around WASH programming, which helped to contain cholera and other post-flood diseases. Urban drainage measures in Beira, Mozambique also reduced the flood impact in comparison with areas that did not have these measures.

Successes notwithstanding, challenges remain. Interviewees identified multiple entry points for supporting communities to build resilience to future events including strengthening disaster risk awareness, improving early warning systems (EWS), protecting critical infrastructure, scaling up resistant housing, and integrating DRR programming into recovery and development programming.

Early Warning and Early Action

Accurate forecasting of the cyclones allowed for advance warning regarding where and when the cyclones would make landfall and the types of conditions they would bring. However, because of the novel intensity and scale of the cyclones,

particularly Cyclone Idai, interviewees reported challenges linking early warning to early action, and that early action was hindered by availability of protective infrastructure for the hazard level in all three countries. Idai's extended period of wind and rain in Malawi, the extreme winds and enormous volume of precipitation and floodwaters in Mozambique, and the overwhelming intensity of rainfall that resulted in catastrophic landslides in Zimbabwe were unlike anything impacted communities had seen before or could imagine. Under the best of circumstances, that makes early warning extremely difficult, and yet this is one of the principle challenges communities will face with climate change - events larger, more intense or different, or in different locations from anything previously experienced. This highlights the critical importance of ensuring that end-to-end warning systems are contextualized and developed with community involvement - from monitoring, to the development of messages, to message dissemination - with the goal of improving comprehension and life-saving action. Additionally, these efforts should be coupled with scenario based approaches, climate science, and expanded hazard mapping to guide evacuation and safe shelter identification, coupled with increased focus on robust and hazard resistant construction.

Critical Infrastructure

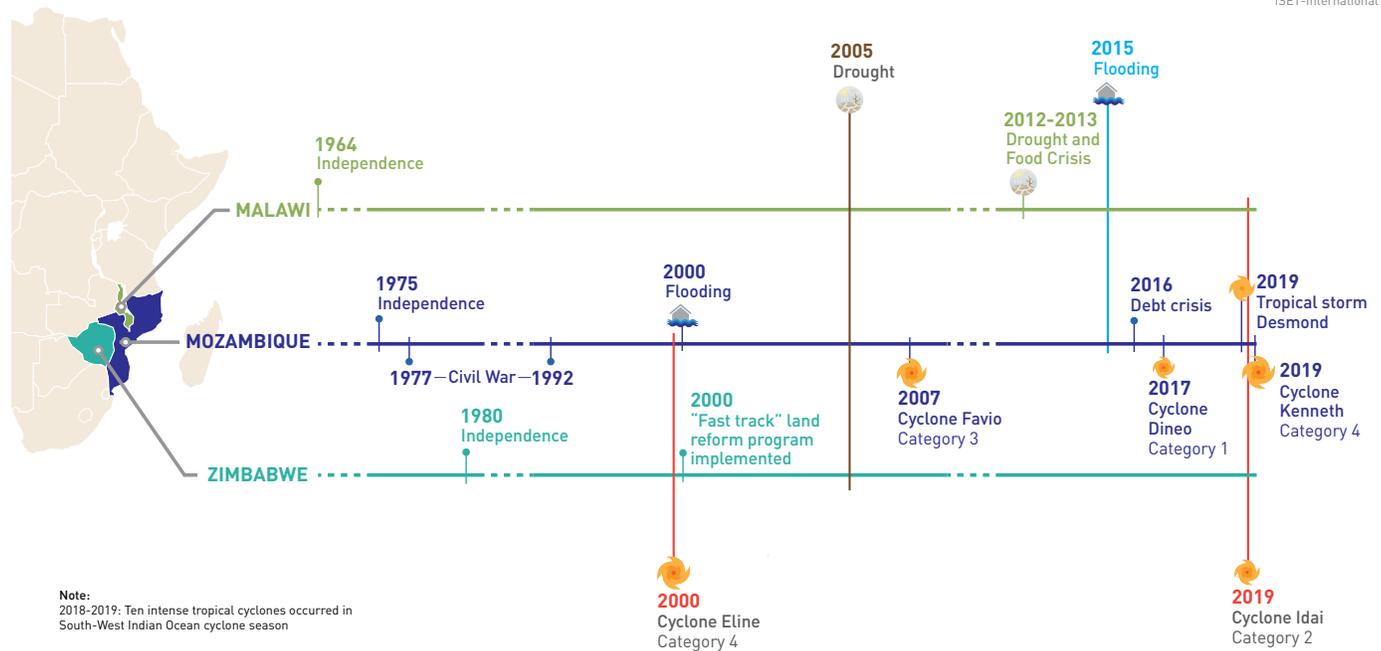
The success of WASH programming in containing post-flood diseases was a significant achievement in light of the breakdown of critical infrastructure - including water supplies, sanitation, roads, and communication - in impacted locations in Malawi, Mozambique, and Zimbabwe. These infrastructure challenges echoed our findings from other Post-Event Reviews - virtually everywhere across the globe there is ongoing need for identifying and protecting critical infrastructure and developing contingency plans for response to potential failure. Climate resilience can be improved via scenario-

FIGURE 1

Timeline of major natural hazard, economic, and political events mentioned by interviewees

Droughts and flooding are becoming more severe and frequent. Underlying these challenges are socioeconomic vulnerabilities that, in combination with the impacts from these disasters, are eroding people's capacity to respond.

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based planning, conducted at multiple scales. Coupling this with non-structural options, such as nature-based solutions, can be particularly effective for hazards which are rapidly intensifying due to climate change, for example along Beira's coastline where concrete flood walls were heavily damaged. Maintenance, and ensuring the long-term sustainability and operability of equipment are further key components of this scenario planning, as they are often the weak point resulting in failure.

Localization of knowledge, skills, and materials

Study findings underscore the need for materials, knowledge, skills, and funding at all levels, including at the community level, to ensure the longevity of key infrastructure, response, and forecasting equipment. Localized resources should be coupled

with a balance between local and international support to maximise the advantages of both. Interviewees relayed stories of equipment breaking down and being unable to repair them because of the cost of parts, the lack of knowledge of how to do so, inaccessibility of replacement parts if the equipment was manufactured abroad, or a combination of all three. This highlights an entry point for donors, institutions, and governments to maximize their investments by supporting the localization of skills, knowledge, and materials/equipment. If several motors, that could be repaired locally, were purchased instead of one new boat of equal value, both donors' investments and communities' ability to save people during floods would be maximized.

Localized knowledge, skills, materials and capacity are also a vital aspect of resistant housing. Across the region impacted by Idai and Kenneth, the majority of rural and peri-urban residents live in homes they have built themselves from locally available materials. These homes, typically made from mud brick with thatch or sheet-metal roofs, have limited resistance to strong winds and floodwaters. However, careful attention to how and where these structures are built, how the space around them is maintained, and how externally sourced materials – like cement – can be used more effectively to increase resilience can determine whether a structure survives or fails in a severe weather event. Combining local knowledge with locally relevant external information, from the inception phase through implementation and especially in the rebuilding and reconstruction phase is key. This can inform house typologies that are more resistant yet also cost efficient and fit the local context. Though this is happening in individual projects, it has yet to be taken to scale.

If expense, inaccessibility of materials, or lack of timely financial support from government or other agencies is preventing the widespread construction

of resistant homes, communities should consider, and in many cases are, how they can independently make the structure of their homes more resistant (see Box 1). These incremental improvements in homes would ideally be complemented by one resistant space built in a safe location as determined by hazard mapping in each community. This could be a resistant school or clinic, for example, funded by the government or donors, which can double as an evacuation center.

Key considerations for resettlement and livelihoods

In the wake of Cyclone Idai, the governments of Malawi, Mozambique, and Zimbabwe are all wrestling with questions about not just how and how long it takes to support rebuilding, but also if, where, and how to relocate communities living in high hazard areas. This includes communities that are repeatedly impacted by floods and communities that lost their land or were shown to be far more vulnerable to physical impacts than previously known. In Malawi, interviewees noted that the government is now focusing on resettling communities within their traditional authority,

BOX 1. RESISTANT HOUSING IN SOUTHEAST AFRICA

Resistant homes are homes that withstand hazards such as strong winds, intense rainfall, and flooding. Across Malawi, Mozambique, and Zimbabwe typical houses are made from mud brick or cement blocks with grass-thatched or tin sheet roofs. Cement homes have a significant resistance to strong winds and floodwaters; in contrast homes built from more basic materials all too easily lose their roofs in strong winds, and rain and

overland flow can saturate walls, resulting in collapse. Techniques such as improving the quality of roof sheathing, extending the roof overhang to keep mud brick walls dry, improving and strengthening the fixtures attaching the roof to the main structure, switching to cement blocks, and improving the quality of foundations, can help to make homes more resistant to hazards associated with cyclones.

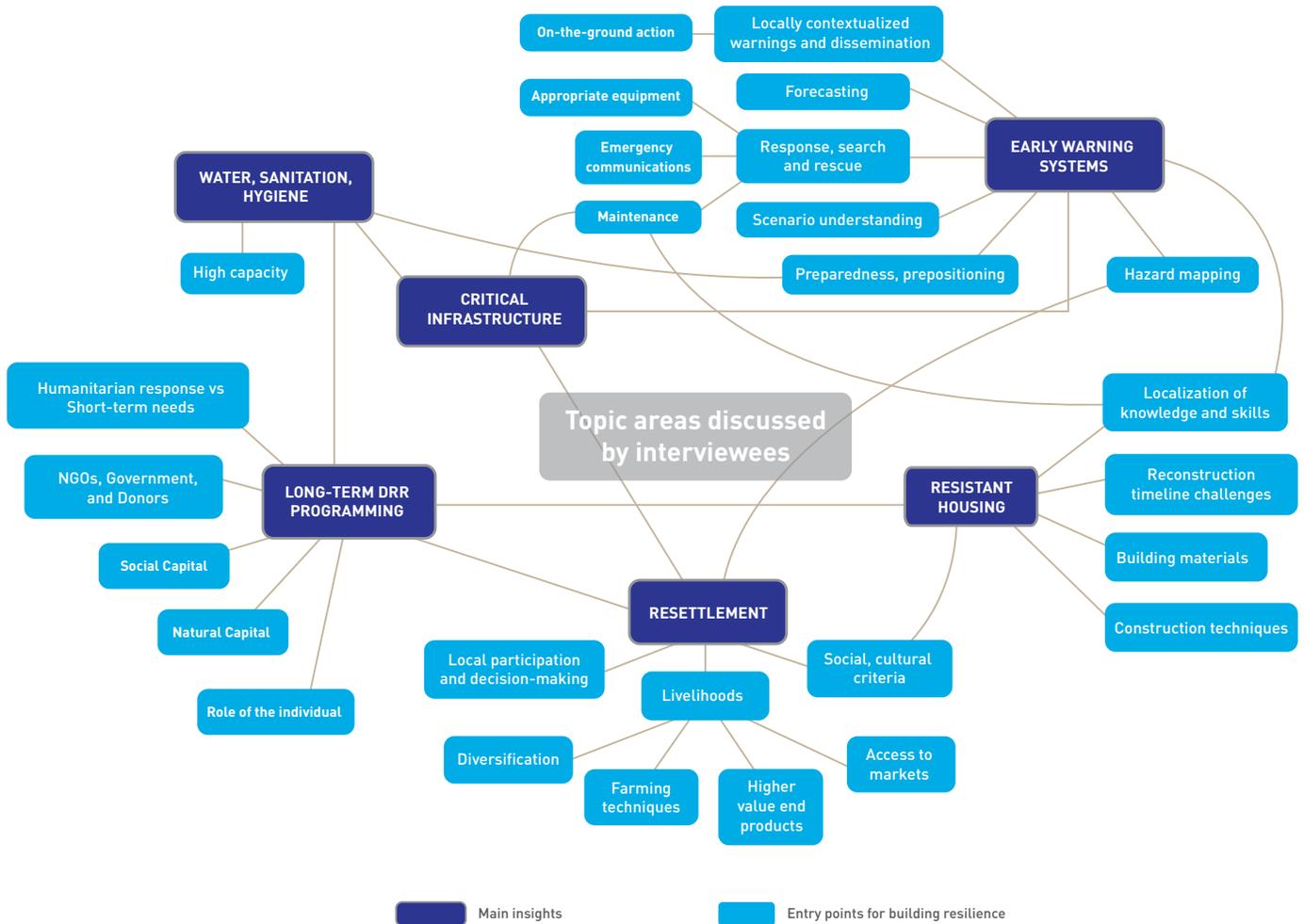


Distribution of non-food items in Buzi, Mozambique in the aftermath of Cyclone Idai © IFRC

based on previous unsuccessful resettlement attempts that either were forced or were outside their traditional authorities. In Zimbabwe, the government has partnered with international geophysicists to identify safe resettlement sites, but there remain challenges about whether those sites will support the existing livelihoods of those resettled. In Mozambique, some communities at high risk expressed a willingness to be resettled but were concerned about how and where, and whether their livelihoods would be supported. Clearly, key variables that are, and should be considered in resettlement planning include using local knowledge, experience, hazard mapping, and climate information to inform the siting of key

infrastructure and services, maintaining cultural aspects, and locating people in places where they can maintain and improve upon their current livelihoods. Given the chronic food insecurity challenges experienced in all three countries, efforts to resettle communities will ideally also support livelihoods diversification or alternative livelihoods, including diversification of farming techniques and crops, and training in the production of higher value end-products so that any loss of social capital resulting from relocation is compensated with a decrease in underlying vulnerability.

FIGURE 2
Mind-mapping of key findings



Taking the longer view

These insights and lessons highlight areas that can be strengthened now, via specific interventions and programs, to reduce harm from future events. Their emphasis on ex-ante and resilience building actions is an important one, as it supports a transition from suffering damage and loss and then working to recover, to avoiding damage and loss altogether. Unfortunately, this approach is currently under-emphasized and under-funded. The currently more common short-term funding cycles do not allow

the longer-term timeframe required for effective and sustainable DRR, resilience, and development programming. Humanitarian response funding is also too short-term to allow for longer-term approaches. A shift to more systematic design, broader engagement, and multi-year funding is needed to truly support DRR and resilience efforts at scale.

This divide is most sharply seen between the development and humanitarian sectors. Humanitarian response is at best able to return



Repairing road damage in Chimanimani, Zimbabwe © ISET-International

people to their previous position, which is oftentimes a very vulnerable one. The need to couple humanitarian response with longer-term DRR and development has been recognized for at least the past 20 years. At the 2016 World Humanitarian Summit, global humanitarian and development actors committed to shifting this focus through new ways of working, including joint assessment planning and multi-year funding. The Idai response indicates action still lags behind intent.

Mozambique's recovery and reconstruction plan, for example, has the potential to act as a vehicle for integrating DRR and preparedness actions into the recovery phase while also addressing the entry points highlighted in this study. International actors and donors should commend and support local government attempts to incorporate DRR and preparedness in recovery and reconstruction

plans, providing technical and financial support to national initiatives. Such an approach could serve as an example for the whole region to take a more comprehensive approach to building back better and reducing future risk at the same time.

Looking towards the future

The insights outlined here highlight actions and pathways for leveraging existing strengths to reduce current and future risks, in the three countries that are the subjects of this review, and around the world. Taken together with findings from past PERC studies, these insights underscore the need to advance disaster risk reduction now in the face of new and emerging hazards.

Ultimately, underpinning these findings is the recognition that in countries where economic vulnerabilities converge with fragile natural environments, what is needed is longer-term



engagement that addresses these vulnerabilities while at the same time reducing community disaster risk. Shifting towards such longer-term engagement, however, requires transforming the current funding model away from shorter-term funding cycles and response focused programming to long-term engagement and multi-year funding.

These efforts should be accompanied by inclusive policies and investments that are locally tailored, risk informed, and climate-smart. Vitally, this will require stakeholders to go beyond business as usual to DRR and development being fundamentally integrated into, or sequenced with, humanitarian response planning and funding.

Communities and countries around the world are facing the impacts of a changing climate, including an increase in the frequency and severity of extreme weather events. Communities are not facing these challenges with a deficit however. As this PERC study and our other PERC reports illustrate, there is a depth of knowledge and experiences that stakeholders can leverage to build resilience. The global DRR, humanitarian, and development sectors know the challenges communities face and have the tools to support them. Recognizing this, donors and governments need to commit to funding, collaborating more across these three work areas, and implementing the actions that are needed.

The Zurich Flood Resilience Alliance PERC provides research and independent review of large flood events. It seeks to answer questions related to aspects of flood resilience, flood risk management, and catastrophe intervention. It looks at what has worked well (identifying best practice) and opportunities for further improvements. Prepared by the Institute for Social and Environmental Transition - International (ISET), together with other members of the Zurich Flood Resilience Alliance - the International Federation of Red Cross and Red Crescent Societies (IFRC), Practical Action, and Zurich Insurance Company Ltd. - and in collaboration with the Mozambique Red Cross (CVM) and the Swiss Agency for Development and Cooperation (SDC), this publication is intended solely for informational purposes. All information has been compiled from reliable and credible sources; however, the opinions expressed are those of the authors. — March 2020