

WHEN THE UNPRECEDENTED BECOMES PRECEDENTED:

Learning from Cyclones Idai and Kenneth





The Post Event Review Capability (PERC) methodology developed by Zurich Insurance Company Ltd, in collaboration with the Institute for Social and Environmental Transition-International (ISET) in 2013, provides a structured method for examining why a hazard becomes a disaster. Utilized 17 times before to examine cyclones, floods, and wildfires in different contexts around the world, this study, which examines the 2019 Cyclone Idai and Cyclone Kenneth impacts in Malawi, Mozambique, and Zimbabwe, marks the first time this methodology has been applied to disasters in southern Africa.

This report has been developed by members of the Zurich Flood Resilience Alliance – ISET-International, 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 and the Swiss Agency for Development and Cooperation (SDC). The study 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 five weeks of field work, over 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.

This product is accompanied by several other similar break out products as well as a longer report. An electronic copy of this brief and other materials from the study are available at: www.i-s-e-t.org/perc-cyclone-idai-2019.

Additional information about the PERC can be found at www.floodresilience.net/perc and additional information about flood resilience can be found at <https://www.zurich.com/en/sustainability/our-role-in-society/flood-resilience> and www.floodresilience.net.

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Foreword

Zürich, April 2020

What you hold in your hands, or more likely read digitally on your device, is our latest post-event review, helping society to learn from disasters and build more resilient communities for the future. It is our most collaborative and extensive post-event review yet, covering multiple hazards including flash floods, landslides, riverine and coastal flooding, and wind damage from two successive, devastating cyclones – Cyclone Idai and Cyclone Kenneth – in three countries in South East Africa – Malawi, Mozambique and Zimbabwe. I want to thank our Alliance partners for their dedication and for working so well together to deliver this complex analysis. I also want to express my deep gratitude for the collaboration and dialogue with the Swiss Agency for Development and Cooperation (SDC) and to the many interviewees and volunteers who gave us their time and shared their expertise and insights with us.

During the background research and fieldwork preparation which began in late 2019, I listened to a radio program that called the devastation left behind in Mozambique by Idai and Kenneth the “forgotten disaster”. Forgetting such an event is frightening, considering that millions of people were then and continue to be in dire need of immediate humanitarian aid and longer-term support to reduce existing risk, protect lives, and build livelihoods. Even more frightening were the moments when I realized how myopic our view can be, depending on where we live and work and which sectors we support. Traditionally, in January the insurance industry looks at and publishes reports on the events from the past year and provides detailed statistics about the sustained losses. Headlines from costly events in the “developed” world, and mostly from the northern hemisphere, dominated the 2019 review, and even there, insured losses were only about one-third of the total. Idai and Kenneth were

a mere footnote – although Idai alone had been, by far, the largest humanitarian disaster caused by a natural hazard event in all of 2019!

Our report shows that good progress had been made by Malawi, Mozambique and Zimbabwe in recent years, both to manage the initial response and to support early recovery. In particular, we found many examples of where these countries have successfully learned from past events and made changes which reduced the scale of impacts from Idai and Kenneth. Nonetheless, we also found that so much more can and still needs to be done to truly embed proactive disaster risk management and resilience-building in current policies, practices, and budgeting. We saw that prioritizing and funding resilience-building and disaster risk reduction (DRR) efforts should be an integral part of humanitarian response and follow-on development programming. These approaches are still too separate and would profit from synergies and integration. We also saw a critical need to better incorporate climate change adaptation thinking and action in a region that is already suffering from increasing droughts, floods, and cyclones. We are very much aware that this is contested and discussions on roles and responsibilities of these sectors immediately follow bringing up this topic. On the other hand, some of our interviewees were very clear that this is an untapped opportunity that we need to work on better and harder, and that we owe it to those who suffer from our failing to do so. The people most impacted by Idai and Kenneth are still suffering more than one year after landfall – the visits and discussions with people in the camps near Buzi have been burnt into my memory and left me with yet another sense of urgency to act.

There are many interconnected issues that we identified during our work and that we try to

represent in a mind map in this report. Some may not be surprising, such as the importance of end-to-end early warning systems that lead to the desired action of an end user, or the connection between critical health infrastructure and the containment of disease outbreak – a major success we found. But some of them are more difficult to discuss, particularly those that are politically sensitive. The term resettlement is politically charged. Discussing and planning resettlements on the ground, particularly when it comes to moving entire village populations, calls for nuance. We recognize these sensitivities and try to accurately reflect the information, challenges and ideas we heard while keeping in mind the local context and caveats – such topics also highlight the limitations of the written word, as a dialogue can explain some of this so much better.

Hence, as with many similar projects that aim to support resilience building, this post-event review should neither be seen as a stand-alone assessment nor as finished with the publication of this report. This main report should just be taken as a stepping stone to further discuss these key insights and recommendations. Indeed, we have already released several additional complementary products, including a series of topic- and audience-specific policy briefs that you can find on our dedicated website¹. We hope these pieces will inform future DRR programming discussions. The Zurich Flood Resilience Alliance itself is eager to support and implement these ideas, lessons and recommendations not just in Africa but in our global community programs.

1 For more information see: www.i-s-e-t.org/perc-cyclone-idai-2019

SECTION I.

Physical Events

In March and April 2019, Tropical Cyclones Idai and Kenneth brought severe destruction and damage across southern Africa, impacting lives, homes, and livelihoods in Malawi, Mozambique, and Zimbabwe. Strong winds, torrential rainfall, and ensuing floods and landslides from Idai caused over US\$2 billion in damages, destroyed over 200,000 homes, and left over 1,300 people dead, with many more missing. The storm ultimately affected approximately 3 million people across the three countries. A month later, Cyclone Kenneth made landfall in northern Mozambique. High winds, heavy rains, and subsequent flooding from the storm damaged or destroyed tens of thousands of structures and caused over US\$100 million in damages² (see Section III for more detailed impact numbers).

Cyclone Idai

The Cyclone Idai weather system impacts came in waves. Météo France La Réunion³ started monitoring the tropical disturbance that eventually

became Cyclone Idai on March 1. The tropical disturbance first formed in the Mozambique Channel between Madagascar and the southeast African coast. On March 4, it made landfall as Tropical Depression 11 and moved inland across north-central Mozambique and into southern Malawi, bringing strong winds and heavy rain. Flooding began in both countries on March 6.

In Mozambique, the low-pressure system caused flooding in Zambezia and Tete provinces displacing more than 140,000 people. In southern Malawi, the storm pummeled communities with rain and winds non-stop for five days, resulting in some of the largest floods on record in the lower Shire River basin. Heavy rainfall and widespread flooding washed out bridges and roads, and destroyed thousands of homes. High winds tore off roofs, allowing rain to enter and destroy mud-brick homes. Dams collapsed as rising waters overwhelmed flood mitigation infrastructure and inundated communities and agricultural fields.

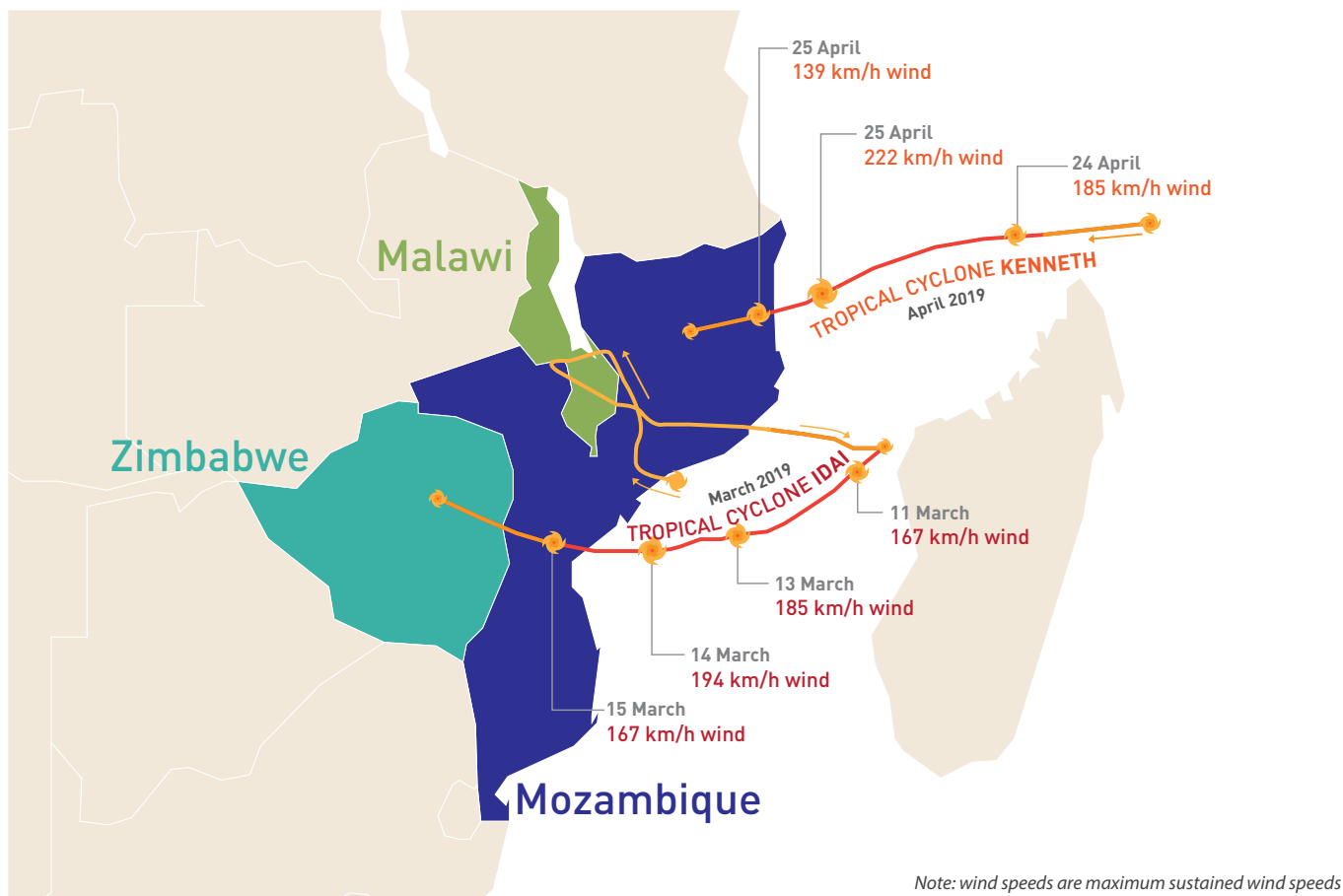
In Malawi, of the fourteen districts that experienced direct effects from the storm, Chikwawa, Zomba, Phalombe and Nsanje were the hardest-hit. Phalombe and Zomba, in the Shire Highlands, and Nsanje and Chikwawa, in the Lower Shire valley,

² Aon. 2019. Weather, Climate & Catastrophe Insight 2019 Annual Report. <https://reliefweb.int/sites/reliefweb.int/files/resources/20200122-if-natcat2020.pdf>

³ Météo France La Réunion is a French Meteorological Service that monitors and forecasts weather in the southwest Indian Ocean.: <http://www.meteofrance.com/accueil>

FIGURE 1

Paths of Cyclone Idai and Cyclone Kenneth



are all heavily populated with residents dependent on subsistence agriculture and animal husbandry for their livelihoods. Nsanje and Chikwawa districts in particular are highly prone to regular seasonal flooding. However, flooding from Tropical Depression 11 was far worse. Torrential rains caused widespread riverine and overland flooding of both communities and agricultural land. Flood impacts were compounded by deforestation and farming of steep slopes in the Shire Highlands, affecting both river valleys in the Highlands and the Shire River valley downstream. The intense rainfall resulted in

both erosion and rapid runoff, exacerbating impacts downstream.

Systems and mechanisms – such as clearly established communications channels, pre-positioning of national supplies in areas expected to flood, and coordination mechanisms connecting individuals, villages, districts and national departments – implemented in the aftermath of the 2015 floods helped to reduce the number of lives lost. However, southern Malawi had never experienced a tropical depression of this strength

before and consequently, even with advance warning, communities and the government were unprepared.

Unusually, the storm did not dissipate as it moved inland over Malawi. Instead, on March 9, it moved back out into the Mozambique Channel, rapidly intensified, and made landfall a second time as Cyclone Idai. Information regarding the impending second landfall reached national authorities in Mozambique on March 12, advising of intense wind speeds, but exact scenarios of the storm's magnitude and potential impacts remained uncertain. In the early morning hours of March 15, Cyclone Idai made landfall near the port city of Beira, home to close to 600,000 people, as a Category 2 storm. Wind speeds of 180 km/h tore roofs off homes and buildings, ultimately damaging or destroying 90 percent of the buildings in the city and heavily impacting structures in surrounding communities. Downed trees, power lines, and debris, including blown-off roofs, littered the streets and disrupted transportation. Communication was lost entirely when the electrical grid, telephone lines, and mobile phone services all failed.

The winds also pushed a storm surge of up to six meters into low-lying residential and agricultural areas along the Zambezi and Pungwe rivers. Some areas in Beira escaped flood damage due to prior investment in urban drainage systems, which performed successfully. Flooding also could have been much worse had Idai made landfall during a full or new moon, when the high tide would have been at its highest⁴.

4 Idai's landfall was around the same time as high tide, but fortunately the tide was one of the lowest high tides of the moon cycle, coming as it did at a quarter moon rather than full or new moon. The Earth Observatory. (2019). *Devastation in Mozambique*.

Though the winds weakened as Cyclone Idai made its way across Mozambique and into eastern Zimbabwe, torrential rains continued. Here too, although forecast information was available, the extremity of the event was not adequately understood or communicated. Idai crossed the wide, flat, coastal plain of inland Mozambique and then was abruptly pushed upward into the mountains along the Mozambique-Zimbabwe border. The rapid gain in elevation caused the storm's air mass to cool off quickly, further increasing rainfall intensity and resulting in catastrophic landslides and flash flooding in the Chimanimani and Chipinge districts of Zimbabwe, leveling communities and killing over 600 people. Floodwaters also swept people into neighboring areas of Mozambique; at least 82 bodies have been found as far as 40 kilometers from the border. In addition to the documented numbers, however, over 300 people remain unaccounted for.

As floodwaters flowed out of the mountains and back east into Mozambique, already swollen rivers burst their banks, sending floodwaters surging into nearby communities, inundating an area over 2,165 square kilometers in size and forming an 'inland ocean'⁵. Meters deep, the waters completely overwhelmed communities across Sofala and Manica provinces, submerging homes, infrastructure, and agricultural fields, killing hundreds of people, marooning thousands and forcing hundreds of people to flee for their lives to rooftops and trees. The remnants of Idai dissipated only on March 21, making it an unusually long-lived system.

5 Nasa Earth Observatory. (March 2019). Devastation in Mozambique. <https://earthobservatory.nasa.gov/images/144712/devastation-in-mozambique>

FIGURE 2

Graphic illustration of area impacted by Cyclones Idai and Kenneth



Credit: Google Map. Imagery © TerraMetrics, Map data © 2020 Google



Cyclone Kenneth

Just six weeks after Cyclone Idai made landfall, Cyclone Kenneth came ashore in northern Mozambique, marking the first time in recorded history that two strong tropical cyclones (at or above Category 2) affected Mozambique in the same season. Météo-France La Réunion started monitoring the system on April 17, and classified it as a tropical disturbance on April 21. Kenneth rapidly intensified, becoming a Category 4 tropical cyclone on April 24, and made landfall on the northern coast of Mozambique on April 25.

Kenneth made landfall between the two districts of Macomia and Mocimboa da Praia, with peak wind gusts of 220 km/h, making it the strongest cyclone ever to hit Africa⁶. Unlike Idai, Kenneth rapidly dissipated as it moved inland. Météo-France La Réunion published its last update on Kenneth on April 26, as wind speeds dropped below 65 km/h. However, the sheer intensity at landfall and accompanying storm surge and heavy rains impacted 374,000 people, damaged or destroyed

⁶ Government of Mozambique. (May 2019). *Mozambique Cyclone Idai Post Disaster Needs Assessment*.



Cyclone damage remaining visible one year after Idai, Buzi area, Mozambique © Michael Szönyi, Zurich Insurance Company Ltd.

35,000⁷ homes, triggered power outages, and damaged key transportation routes and bridges.

Arriving towards the end of the rainy season, the storm added to already high waters in rivers and dams in the region causing many to overflow. Kenneth primarily impacted rural and less populated areas. While the city of Pemba, located south of where Kenneth made landfall, avoided early impacts of the storm, the city subsequently received over

7 UN OCHA. (2019). Cyclones Idai and Kenneth. <https://www.unocha.org/southern-and-eastern-africa-rosea/cyclones-idai-and-kenneth>

400mm of rain in 48 hours⁸ resulting in devastating mudslides and flooding. Ultimately, Kenneth impacted the provinces of Cabo Delgado, Nampula, and Pemba, hitting an area already suffering from protracted conflict⁹.

8 World Meteorological Organization. (26 April 2019). Another unprecedented tropical cyclone and flooding hits Mozambique. <https://public.wmo.int/en/media/news/another-unprecedented-tropical-cyclone-and-flooding-hits-mozambique>

9 Since 2017, attacks from an insurgency in Cabo Delgado have killed over 700 people and displaced thousands. For more information see here: <https://reliefweb.int/report/mozambique/northern-mozambique-invisible-conflict-very-real-consequences>

SECTION II.

Disaster Risk Management Landscape

The response, recovery, and reconstruction in the aftermath of Cyclones Idai and Kenneth were, and still are, complicated by underlying environmental and, often interrelated, socio-economic stressors in all three countries. High poverty levels, relatively young governments working with the legacy of colonization, heavy usage of natural resources and degradation of natural buffers, dependence on subsistence agriculture, and ongoing conflict coupled with limited economic development have increased the vulnerability of many of the cyclone impacted areas. Further, the deeply entrenched nature of many of these issues complicates communities' ability to build back better and to make the vital development gains needed to reduce their vulnerability over the long term.

Socio-economic landscape

Malawi, Mozambique, and Zimbabwe all rank very low on the Human Development Index (Malawi 172; Mozambique 180; Zimbabwe 150¹⁰) and all three are among the top 30 most climate vulnerable countries

in the world¹¹. Coupled with these vulnerabilities, the governments in all three countries are relatively new, having gained independence in the past 40-60 years¹², and all three have faced challenges since their inception. In Zimbabwe, which was the most successful of the three countries at establishing a modern economy, the political environment from 1987-2017 eroded economic gains, leaving the country currently only slightly ahead of Malawi and Mozambique in terms of human development while also facing a humanitarian and economic crisis. In Mozambique, the 2016 hidden debt crisis pushed the country into an economic crisis. Additionally, ongoing conflict in the central and northern provinces has contributed to unrest, displacement, food insecurity, and hundreds of deaths. In Malawi, farm subsidy vouchers in the early 2000s resulted in economic gains. By 2010 however, corruption led to economic losses and political instability, resulting in severe food shortages.

¹⁰ UNDP. (2019). *Human Development Report 2019 Inequalities in Human Development in the 21st Century*.

¹¹ ND-GAIN Country Index. (2017). <https://gain.nd.edu/our-work/country-index/rankings/>

¹² Malawi gained independence in 1964, Mozambique in 1975, and Zimbabwe in 1980.



Damages from Cyclone Kenneth in the province of Cabo Delgado, Mozambique © Matthew Carter, IFRC

Environmental landscape

All three countries have made concerted efforts via environmental policies to safeguard natural resources and reduce impacts to the natural environment. However, the impacts of these policies are limited in the face of increasing demand on natural resources coupled with shifting precipitation patterns; two critical factors that are increasingly eroding food security across the region. In particular, heavy reliance on rainfed, subsistence agriculture as a primary livelihood in all three countries, coupled with high fertility rates (averaging five to six children per woman in rural areas) is placing an increasingly heavy burden on the natural environment – for water, agricultural land, grazing and fishing, building materials, and fuel, among other things.

In Zimbabwe, for example, while the country's wildlife resources have been well managed, and environmentally sensitive areas have been designated as national parks and forest reserves, existing regulations are fragmented across the jurisdiction of numerous different ministries, and therefore difficult to enforce. Generally high environmental awareness and a number of legislative acts address the need to protect the natural resource base. Nevertheless, the resource base in the communal and resettled areas that are home to the majority of the population are overstressed, contributing to reduced agricultural yields and ongoing food security challenges.

In Malawi, the effectiveness of the National Environmental Policy, adopted in 1996 to provide an overall framework for revising and adopting sectoral environmental policies and for ensuring they align



with the principles of sustainable development, is constrained by population¹³ and climatic pressures. In particular, increasing precipitation variability threatens agricultural yields and has left large swaths of the population malnourished or at high risk of malnutrition. Recognizing the importance of balancing the protection of natural resources and the environment on one hand, and maintaining sustainable production and economic growth on the other, the national government has included these issues as key priorities in the latest Malawi Growth and Development Strategy (MGDS III) 2017–2021 and the National Resilience Strategy.

A large portion of Mozambique’s population is reliant on the country’s natural resource base for their sustenance and livelihoods. However, ongoing

environmental degradation including deforestation, habitat loss, soil erosion, and land and water degradation has threatened livelihoods and increased people’s risk to floods. While institutional capacity to manage and overcome these environmental challenges has been limited, the National Environmental Management Plan (PNGA), which was established in 1994, aimed to balance development needs with environmental protection through instituting a national environmental policy, strengthening institutional capacity and raising community awareness. In 2012, the country adopted the 2013–2025 National Climate Change Strategy to support implementation of mitigation and adaptation measures. However, even given the adoption of these measures, there is room to strengthen monitoring and implementation.

Taken together, these policy efforts have made important initial strides in safeguarding natural

¹³ Malawi has a population density of over 150 people/km², as compared to less than 30 people/km² in Mozambique and Zimbabwe.

resources and protecting the environment. However, much more needs to be done to address the pressures of increasing land degradation, deforestation, declines in water quality and availability, soil erosion and depletion, and as a result, stunted agricultural production and food insecurity. Coupled with the impacts of climate change, these processes are and will push people into further vulnerability.

Climate Change

In the past several years, the southeastern African region has experienced repeated severe droughts and recurring flooding, which has impacted subsistence farming, the foundational livelihood for the majority of people living in Malawi, Mozambique and Zimbabwe. Widespread droughts in 2011, 2016-2017, and 2018-2019, coupled with the impacts of the cyclones, have contributed to rising food insecurity, with five million¹⁴ people across the region currently in need of humanitarian assistance. Seen through this lens, the intensity and destructiveness of Cyclones Idai and Kenneth in 2019 – particularly how they combined with existing food insecurity and crop-failure – are representative of a new normal rather than an exceptional extreme.

Rainfed, subsistence agriculture relies first and foremost on predictable rainfall. Yet, climate change is manifesting as an increase in the variability of weather, an increase in the frequency of rare events like hailstorms, heatwaves and cold spells, changes in temperature regimes and overall increases in temperatures, shifts in rainfall timing and location,

14 USAID. (September 2019). *Tropical Cyclones Idai and Kenneth*. <https://www.usaid.gov/crisis/cyclone-idai> and Integrated Food Security Phase Classification on Reliefweb. (August 2019). *Malawi: Acute Food Insecurity July - September 2019 and Projection for October 2019 - March 2020*. <https://reliefweb.int/report/malawi/malawi-acute-food-insecurity-july-september-2019-and-projection-october-2019-march>



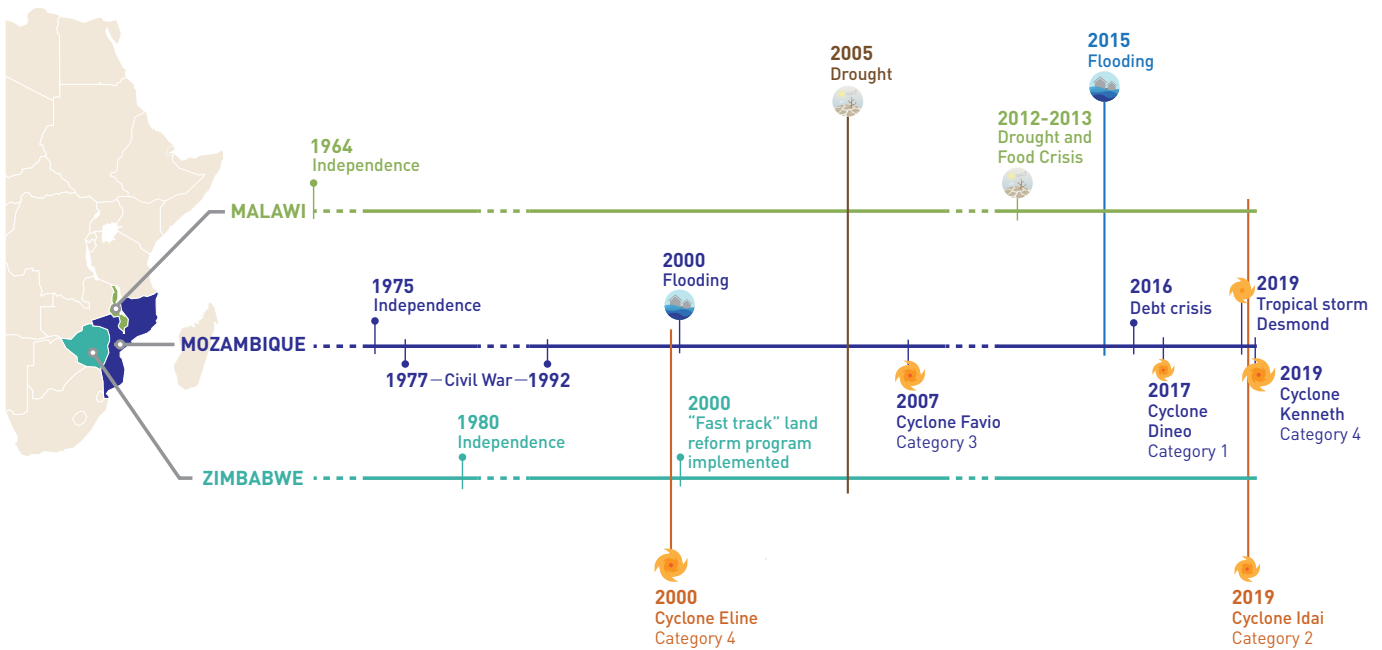
Roughly 50% of Mozambique's population lives under the poverty line. Mozambique's agricultural sector accounts for approximately a quarter of the country's GDP and almost 80% of employment. Strengthening the capacity and resilience of the sector to the impacts of climate change and extreme events is vital to protecting Mozambique's economy.

and increases in rainfall intensity. These changes are resulting in a reduction in seasonal predictability, increased crop water usage in response to higher temperatures, and increases in flooding, dry spells, and the intensity and duration of droughts. These, in turn, are impacting water availability, water quality, and food security. Sea surface temperatures and sea levels are also rising, increasing the intensity and moisture content of tropical cyclones and the potential for damage from storm surge. Lastly, climate change is leading to the emergence of new weather hazards in places that were previously safe.

Particularly for countries like Malawi, Mozambique and Zimbabwe, the intensification of existing weather hazards and the emergence of new weather hazards in areas previously spared will add to the complexity of current non-weather-related challenges and will both increase existing vulnerabilities and create new vulnerabilities.

FIGURE 3

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



2018-2019: Ten intense tropical cyclones occurred in South-West Indian Ocean cyclone season

Institutional landscape

To reduce the impacts from disasters, Malawi, Mozambique, and Zimbabwe have all implemented a variety of Disaster Risk Reduction (DRR) and Disaster Risk Management (DRM) policies and frameworks and have set up government institutions with various mandates to act. However, even with these policies and frameworks in place, most action is responsive. There is significant room to strengthen institutional capacity to act proactively.

In Mozambique, in response to the devastation wrought by the floods in 2000, the government established a governance framework for DRR at the local and national levels. This has significantly improved the country's capacity to manage

and respond to disasters. The creation of the National Institute of Disaster Management (INGC), the National Master Plan for DRM, and the implementation of a DRM law in 2014 have further strengthened the country's capacity for response. In particular, since the establishment of the INGC in 1999, their collaboration with key governmental agencies and humanitarian and non-governmental organizations (NGOs) has led to clear delineation and knowledge of roles and responsibilities, which has facilitated preparing for and immediately responding to disasters. However, limited resources remain an ongoing challenge, constraining their institutional capacity.

In Zimbabwe, civil protection and DRM are resourced, but those resources are largely held at the national level, which restricts the ability



Buzi, Mozambique was one of the hardest hit districts following Cyclone Idai © Katie Wilkes, IFRC

of provincial and district authorities to respond quickly and limit major losses in the event of a disaster. Further, the legislative framework for DRM is currently guided by the Civil Protection Act of 1989. The result is a DRM system that is predominantly focused on civil protection and emergency management—as opposed to a holistic approach—and which is largely reactive as opposed to proactive.

In Malawi, the government has established the Department of Disaster Management Affairs (DoDMA) to oversee and coordinate the development of disaster risk management programs and to coordinate response and resource mobilization. Outside of this, however, there is little coordination between government departments responsible for agriculture, environmental protection and restoration, and DRM. Consequently, opportunities to implement projects that simultaneously deliver benefits across all of

these sectors are being lost. Similarly to Zimbabwe, centralized funding also restricts the capacity of district officers to work proactively.

Even in the face of the catastrophic impacts of Cyclones Idai and Kenneth, these institutions and frameworks were vital in reducing further harm. However, the cyclones also revealed the need to shift DRM efforts to focus more on proactive action and on DRR to ensure that future losses do not outpace the capacity to respond.

These demographic, environmental, socio-economic, and governance challenges exacerbate the impacts of extreme events such as Cyclones Idai and Kenneth by constraining the absorptive capacity and ability of communities to respond and recover. While past disasters have informed DRM practices and led to the strengthening of institutions and enhancement of early warning systems in all three countries, as detailed in the next section, challenges remain.

SECTION III.

What happened

Early Warnings

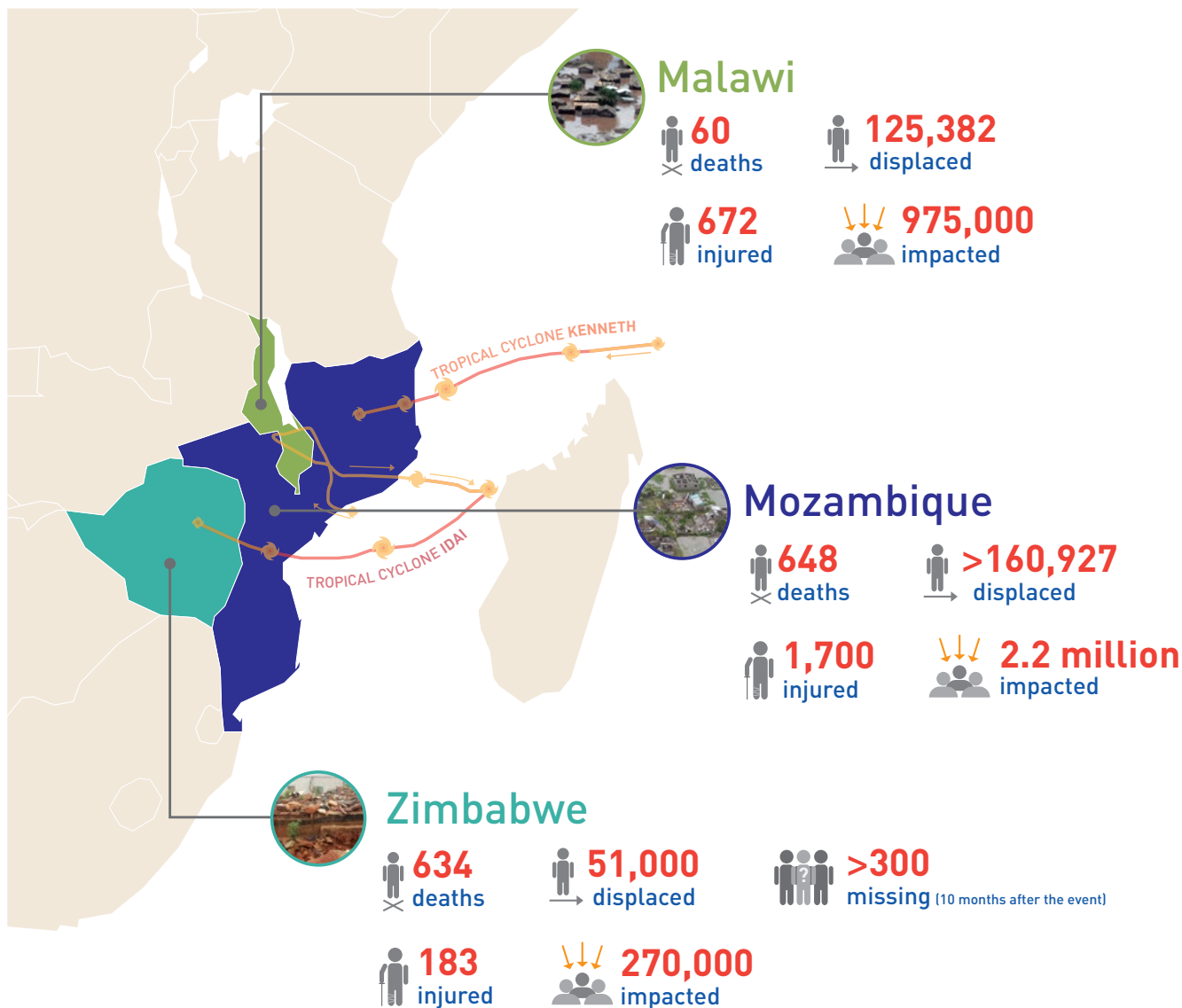
Regional and global forecasting efforts supported accurate forecasting of the location of landfall and expected windspeeds for both Cyclone Idai and Cyclone Kenneth. This allowed national meteorological actors to alert agencies and communities in the storms' paths. There were, however, challenges in issuing and disseminating storm warnings down to the community level.

In Malawi, the National Meteorology Department disseminated warnings through well-established systems to the district and community levels. However, interviewees reported that many community members had no framework for interpreting the forecasts and what actions they should take in response. The presence of a tropical storm so far inland and the type of weather it brought were new to officials and citizens alike. Consequently, the warnings were useful primarily for areas and people typically impacted by Lower Shire Valley flooding. Flooding due to overland runoff and rising groundwater levels and damage from multiple days of continuous strong winds caught people off guard, with devastating impacts.

Similarly, in Mozambique, both cyclones were accurately forecast in regards to wind speed, location, and rainfall. In some communities in Sofala provinces the forecasts triggered early actions activating the Mozambican Red Cross volunteers to preposition supplies, and food, to distribute chlorine and buckets to support post-event water sanitation, and to assist with reinforcing homes and schools. The warnings, however, failed to trigger broader individual and community-level action. All of our Mozambique community-level interviewees relayed that their communities received warnings. However, most of them also relayed they did not know how to translate those warnings into concrete actions they could take to protect themselves and their homes. This was particularly the case that many had never before experienced 180km/h winds. Those who had successfully come through the flood and cyclone events in 2000 and assumed Idai would be similar. Also, in Beira, wind damage took down communication and power lines – impacting radio, television, phone and mobile phone communication – abruptly cutting off the dissemination of warnings. This severely limited the ability to push communications and warnings out to communities regarding continued flood risk.

FIGURE 4

Impacts of Cyclone Idai and Cyclone Kenneth



In Zimbabwe, there were also challenges in forecast interpretation. Many officials and much of the public were initially excited to hear Idai was expected to impact Zimbabwe because typically, tropical storms bring much needed moisture rather than inflict damage. Even among those who appreciated that Idai was a greater threat than past storms,

“

Don't tell people what the weather will be like, tell them what it will do.

- Hanne Roden, German Red Cross - Mozambique

they failed to fully appreciate its potential intensity and impacts. Consequently, even where warnings were pushed out, received, and heeded, they were insufficient. The messaging, to “stay inside, expect strong rains, and avoid low-lying areas with perennial flooding, failed to anticipate and account for the flash flooding and landslides that ultimately occurred. Many of the interviewees in Zimbabwe noted that even in hindsight, having seen the storm impacts, they would be at a loss to know what areas would be safe if an Idai-like event were to hit elsewhere in the Zimbabwe highlands.

Response

All national governments as well as the international community responded to the disaster. National governments mobilized the initial response within days of impact, but the scope of the disaster in all three countries was beyond the capacity of

any one of those governments alone to address. Humanitarian aid was provided to all three countries and donors mobilized funds for the Idai and Kenneth humanitarian appeal. Alongside the humanitarian appeal, the World Bank quickly committed US\$700 million primarily in two areas: immediate relief and recovery, as well as longer-term climate resilience-building with a focus on infrastructure investments¹⁵.

Initial response efforts focused on search and rescue, and providing food, water and immediate health services. However, the destruction of critical

15 World Bank press release. (3 May 2019). *World Bank Scales Up Emergency Support for Mozambique, Malawi, and Zimbabwe in the Wake of Cyclone Idai*. <https://www.worldbank.org/en/news/press-release/2019/05/03/world-bank-scales-up-emergency-support-for-mozambique-malawi-and-zimbabwe-in-the-wake-of-cyclone-idai>. The \$700 million does not include reprogrammed funds, and a small percentage (\$10–20 million) of this funding was counted towards the UN humanitarian appeals.

BOX 1. CYCLONES IDAI AND KENNETH HUMANITARIAN APPEALS IN MOZAMBIQUE AND ZIMBABWE

Following the cyclones, international donors quickly provided US\$194 million to the Idai and Kenneth humanitarian appeal, however this amounted to only 43% of the requested funds¹. Humanitarian appeals for Mozambique and Zimbabwe were revised over the summer to reflect continued repercussions from the cyclones, as well as other shocks, including a devastating drought that has dramatically

increased food insecurity². These revised appeals are currently funded at 47% in Mozambique and 51% in Zimbabwe³.

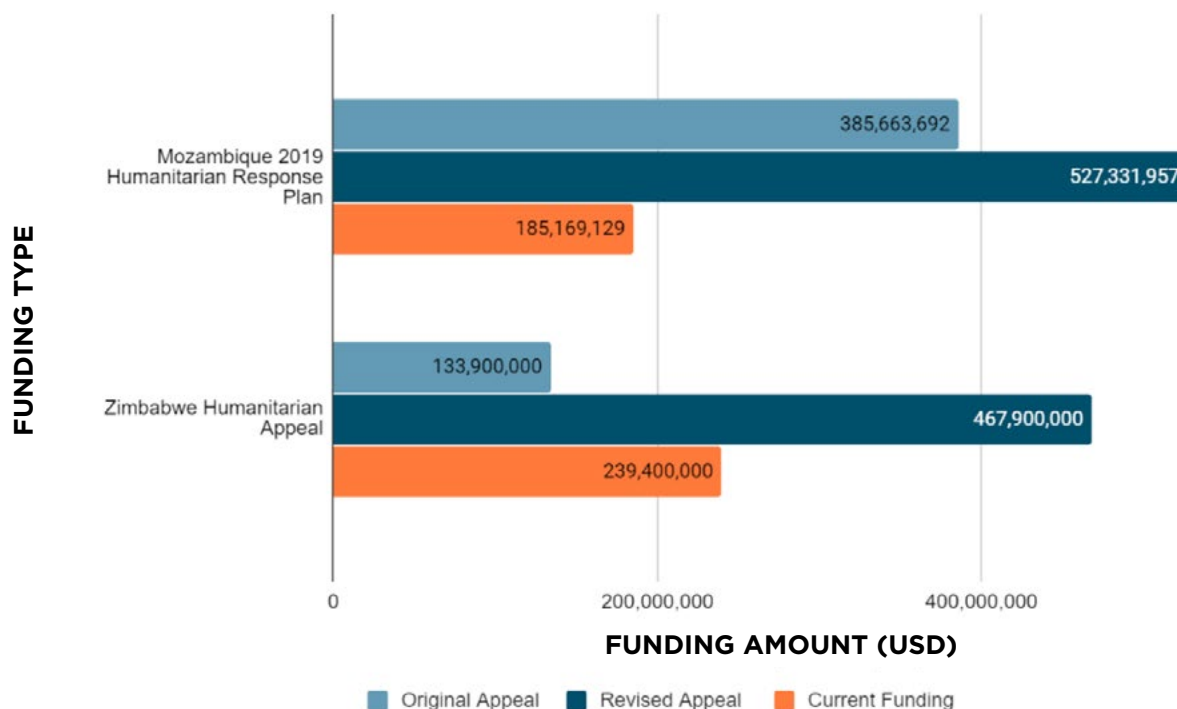
1 UN OCHA's FTS Tracker. (2019). *Cyclone Idai and Kenneth UN appeal*. <https://fts.unocha.org/emergencies/808/summary/2019>

2 Data compiled from Mozambique Revised Appeal (August 2019). https://reliefweb.int/sites/reliefweb.int/files/resources/ROSEA_20190911_Mozambique_Response_Plan.pdf and Zimbabwe Revised Appeal (August 2019): https://reliefweb.int/sites/reliefweb.int/files/resources/ROSEA_Zimbabwe_HumanitarianAppealRevision_06082019.pdf

3 The World Bank also contributed \$700 million in May 2019. Source: World Bank press release. (3 May 2019). *World Bank Scales Up Emergency Support for Mozambique, Malawi, and Zimbabwe in the Wake of Cyclone Idai*. www.worldbank.org/en/news/press-release/2019/05/03/world-bank-scales-up-emergency-support-for-mozambique-malawi-and-zimbabwe-in-the-wake-of-cyclone-idai

FIGURE 5

Overview of the total humanitarian appeal for Mozambique and Zimbabwe vs. what had been raised as of August 2019



transportation routes left many isolated and rural areas inaccessible, complicating response efforts.

In Malawi, the response to Idai was strongly informed by learning from floods in 2015, which killed at least 176 people. The national government, UN agencies, and humanitarian organizations pre-positioned response supplies, including boats, emergency food, water and sanitation supplies, just days before the storm impacted. Village-level civil protection committees took responsibility for preparations, activated early warning systems using whistles or megaphones to sound the alarm, and evacuated people to shelters in advance from known flood-risk areas. As the scale of the event rapidly escalated, government and NGO water rescues were complemented by local fishermen in

dugout canoes who joined the rescue effort and ultimately ferried tens of thousands of people to dry land over the course of several days. Many of them had been stuck in trees for days, hungry, injured, and traumatized.

In Mozambique, strong winds and storm surge hammered the city of Beira. Waves overtopped and eroded the coastal protection structures and pushed floodwaters well inland along rivers. Winds blew roofs off homes and buildings, destroying 90% of the city, including the regional meteorological service office. Flooding from storm surge and heavy rain submerged roads, cutting Beira off from surrounding communities and slowing response. Initial responders accessed the city via helicopter and conducted a preliminary assessment



Houses that may collapse at any moment because of flood water in the Lower Shire, southern Malawi © [Flooding in Malawi flickr photo by George Ntonya/UNDP](#) shared under a [Creative Commons \(BY-NC-ND 2.0\) license](#)

of the impacts of the cyclone. Fortunately, the airport, which also suffered severe wind damage, quickly reopened, providing vital access for the humanitarian response. The airport became the de facto headquarters for the hundreds of responders that arrived within days to assist in search and rescue and to support the distribution of shelters and food items. Interviewees testified to the success of the response; through effective coordination, organizations were able to quickly scale up their operations to address the immense scale of the disaster.

In Zimbabwe, the Idai rainfall began on March 14. As the storm approached, the initial focus was on pushing out warnings to low-lying areas that perennially flood. However, Idai quickly began to damage key transportation and communication infrastructure. One of the two bridges connecting Chimanimani with the rest of the district and province washed away on March 14; the second bridge washed away on March 15 and all communication channels were lost. Chimanimani became a black hole; the country had no

information from an entire district. Landslides and flooding, in addition to taking out homes, blocked or undercut sections of road obstructing access to the hardest hit areas and delaying much needed assistance and supplies. Access in or out was impossible until helicopters were able to fly several days later. The isolation of the district highlighted weaknesses in terms of prepositioning supplies. Had Chimanimani been better prepared with supplies and human capacity, the strain of responding both within town and across the district would have been reduced.

The second phase of the Idai disaster began unfolding in Mozambique within days of landfall as vast areas of the Mozambique coastal plain filled with water flowing out of the Mozambique and Zimbabwe highlands. Floodwaters, three to five meters deep, stranded thousands of people in trees and on rooftops. Community members interviewed for this study reported waiting for days, trying to stay awake as they desperately clung to tree branches, for rescue. Local Red Cross volunteers activated to support their fellow

community members, but all too often lacked both the equipment needed to protect themselves (i.e. rubber boots) from debris in the floodwaters and functioning rescue equipment such as motor boats. In some cases, rescue equipment was absent or inadequate in numbers; in other cases, though it

existed it had not been maintained and had become derelict.

Across the region, with agricultural fields ruined by floodwaters and homes destroyed by high winds, floodwaters, and landslides, local and national governments and humanitarian organizations coordinated to provide shelter, food, and Water,

BOX 2. APPROPRIATE, SIMPLE EQUIPMENT AND ITS MAINTENANCE

Interviewees in Malawi, Mozambique, and Zimbabwe discussed ongoing challenges with equipment (boats, cars, medical equipment, meteorological equipment) that was provided in the past as part of development or disaster recovery programs. Over the years, much of this equipment has ceased to work or is in such disrepair it can not be operated safely, is unable to perform its main function. This is, in part, due to the lack of planning for maintenance needs. As a result, otherwise useful assets sit unused outside government offices across the region.

When donors provide or government agencies purchase equipment, three critical conditions should be met:

1. The maintenance budget needed to maintain equipment should be developed ahead of time.
2. The department or agency who will hold the equipment should be informed of the maintenance budget and encouraged to use it.
3. The choice of equipment should be informed by local technical skills and the availability of spare parts. If the

equipment can't be fixed locally, other options should be explored.

Ideally, donated equipment would be obtained locally, or be intentionally designed for easy repair without the need for made-to-order tools or parts. For rescue boats in Mozambique, for example, this might mean providing a boat with a locally made engine that people are familiar with and that is strong enough for the expected flood water speed in the Buzi river. This will be much easier to fix locally than a heavy-duty engine with multiple electronic components from a country like the US or Germany, which may be stronger, but will be nearly impossible to maintain and repair.

In the case of specialized equipment like weather radar systems, where state-of-the-art equipment is desired, yet where local maintenance is difficult to achieve, investment should include a long-term maintenance plan and budget, resourced at a level that ensures the equipment stays operational. Ideally, this would be coupled with long-term capacity building for the equipment users, so their ability to trouble-shoot small problems increases over time.

BOX 3. LIVING THROUGH LANDSLIDES IN CHIMANIMANI: A STORY FROM THE FRONTLINES

Chimanimani Red Cross volunteers reported that the worst of the impacts in their community occurred at about 9pm on March 15. It was near bedtime and dark when the already heavy rains, which had been falling for nearly 36 hours, became extreme. Suddenly there was a loud, ongoing continuous roar, confusion, and screams for help.

As people rushed outside, floodwaters submerged roads and mud, rocks, and stones cascaded from the upper lands leveling everything in their path. As floodwaters and debris began to overwhelm their homes, some people escaped to neighboring homes. When the sun rose the next day, the morning light revealed utter devastation.

Rubble and debris now marked where swathes of homes had been before. In shock, people frantically looked for missing family members. Others, pinned beneath the debris, screamed for help. In response, the Red Cross quickly organized groups of community members to look for those trapped, injured, and in need. Rocks and flooding blocking their access to the clinic and hospital, responders brought both the injured and the dead to the local church. Working with only a small medical kit from the school, with limited medication and only a few bandages, they triaged and treated only the most affected.

Within hours, the District Authority's Coordinator's office (the local district head of government) stepped in and organized the police, the Red Cross, and churches to assist with response. The Red Cross, charged with collecting basic necessities, went house to house collecting clean water and food, as well

as clothing, for those who had lost everything. About 400 people who had lost homes moved to the undamaged Chimanimani hotel site, which felt safe. Lodging people camping-style in the conference room and lounge, and cooking meals on open fires, the hotel offered shelter until something more semi-permanent could be set up.

By day three post-landslides, the dead bodies in the church started to decompose, requiring the community to begin immediate burial. Ultimately, they buried 44 dead, but because of the many still missing and the persistent smell, survivors knew the death toll was much higher and that there were bodies still buried deep in the debris.

Risking unsafe flying conditions, the first army helicopter arrived about five days after the disaster. It was not until the weather fully cleared eight or nine days after the landslides that support from the outside truly began to stream in, including a larger Red Cross contingent and other volunteers. Medication was one of the essentials most in need - the hospital was full to the brim with people. Those most seriously injured were transferred to neighboring hospitals; the most extreme injuries were sent all the way to the capital, Harare.

The crisis continued to unfold over the next several days and weeks. More substantial support only started to flow in two to three weeks after the event, with the government, private companies and humanitarian organizations bringing clothes, food, tents, medication, and volunteer doctors from Harare and elsewhere to assist the survivors.



A distribution of non-food items in Buzi, Mozambique, in the aftermath of Cyclone Idai © Joost Ruigrok, IFRC

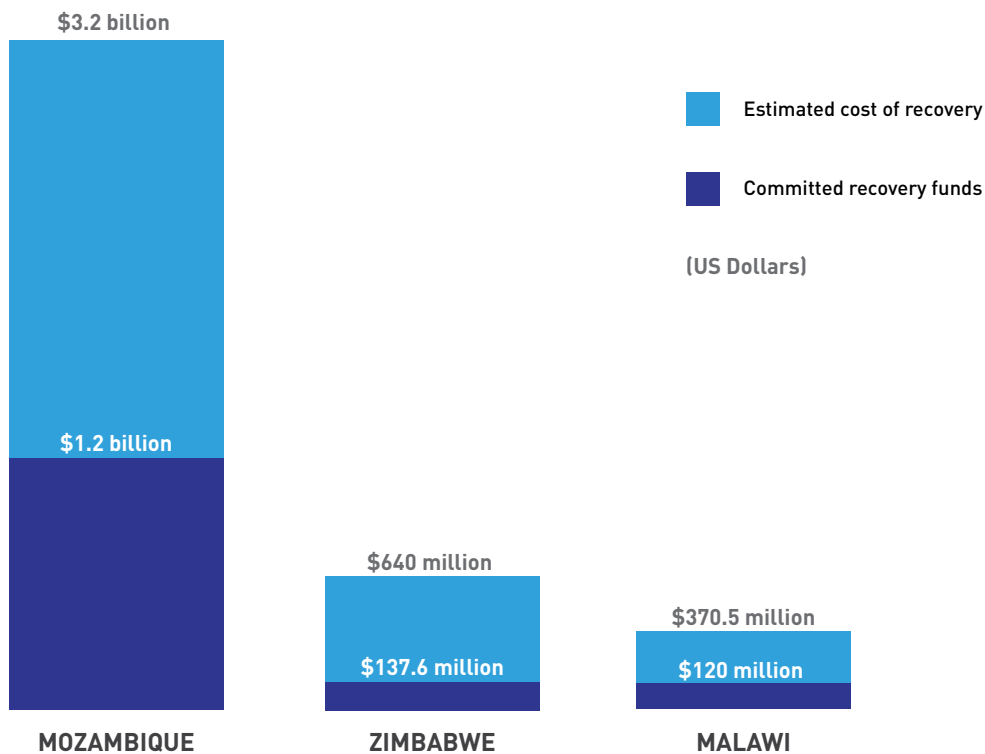
Sanitation and Hygiene (WASH) services to the survivors in the weeks following landfall. Schools, churches, and other community centers became makeshift shelters for the hundreds of thousands of people displaced by the cyclones. Humanitarian agencies and governments deployed air support to drop food and other essentials to communities that were isolated and inaccessible immediately following the disaster until overland access was restored. An initial several months of food assistance was distributed along with shelter recovery kits and other materials to people in communities and resettlement centers, to support the rebuilding and construction of shelters.

In Mozambique, the overlap of longer-term political and violence-based conflict with cyclone impacts further inhibited the reach and speed of the response operations. This was the case in the Gorongosa area of Mozambique, where both reconnaissance and immediate response suffered¹⁶. The same was true in the northern provinces following Cyclone Kenneth, where main access routes not only suffered from infrastructure damage but also accessibility issues. This complicated responders' ability to understand the full extent of

¹⁶ Aerial reconnaissance was restricted in certain areas to prevent intel from being gathered that might shift political power.

FIGURE 6

Estimated cost of recovery in comparison with committed funding raised in Mozambique, Zimbabwe and Malawi



damage and need of the population and to provide the support needed. Interviewees also reported that the security situation on the ground in Cabo Delgado constrained their ability to repair critical infrastructure, especially lifelines for access such as key roads and bridges, and in some cases, it forced many organizations to evacuate.

Long-term Recovery

Long-term recovery, rehabilitation and reconstruction needs from Idai and Kenneth were, and continue to be, massive. Because of the immense scale of the events and the vulnerabilities of those impacted, food, shelter and WASH needs

are ongoing even a year post-landfall. Through joint assessment and collaboration with the governments of Zimbabwe and Mozambique in April 2019, the World Bank estimated the total cost of recovery to be about US\$640 million in Zimbabwe and US\$3.2 billion in Mozambique due to damage from both storms. At a pledging conference in June 2019, only a little over one-third of this funding, US\$1.2 billion, was committed to recovery and reconstruction in Mozambique¹⁷ and only one-fifth of recovery needs,

¹⁷ UNDP (June, 2019), Cyclones Idai and Kenneth: International partners pledge support for reconstruction and resilience building for Mozambique. www.undp.org/content/undp/en/home/news-centre/news/2019/Cyclones_Idai_Kenneth_International_partners_pledge_support_reconstruction_resilience_building_Mozambique.html.



Cyclone damage remaining visible one year after Idai, Buzi area, Mozambique © Michael Szönyi, Zurich Insurance Company Ltd.

or US\$137.6 million, was pledged for Zimbabwe¹⁸. In Malawi, the World Bank approved US\$120 million towards recovery, however Malawi's post-disaster needs assessment estimates recovery and reconstruction needs at US\$370.5 million¹⁹.

¹⁸ Development partners who have donated include the European Union, African Union, Southern African Development Community, the United Kingdom, the United States, UN-Contingency Emergency Response Component, and AfDB, among others. World Bank (July 2019), Zimbabwe Idai Recovery Project Document. <http://documents.worldbank.org/curated/en/493721560514239589/pdf/Project-Information-Document-Zimbabwe-Idai-Recovery-Project-P171114.pdf>

¹⁹ Government of Malawi, Malawi 2019 Floods Post Disaster Needs Assessment (PDNA), 2019.

The initial priority in recovery has been to continue to provide WASH services and to establish temporary shelters or to support people to rebuild their homes. Building on the initial WASH response, governments and humanitarian aid organizations are installing new boreholes and restoring water and sanitation facilities in all three countries. While the prepositioning of chlorine and sanitation supplies and the rapid restoration of the water treatment and distribution system in Beira, Mozambique, most likely helped to reduce the spread of disease, the construction of permanent



For Mozambique’s most vulnerable, the materials they would need to build a cyclone-resistant house could cost the equivalent of 3 years of savings. This is a financial barrier that is impossible for most to overcome.

water and sanitation facilities will help to ensure the continued protection of vital water sources in impacted communities.

Rebuilding shelter

Along with the restoration of sanitation facilities, governmental and humanitarian actors mobilized to support displaced houses with shelter. In some cases, this included providing materials; for the most impacted, temporary tent communities were set up. A year on from the cyclones, tens of thousands of households have been rebuilt by their residents, but many with the same materials and techniques that contributed to loss of homes from Idai and Kenneth. These homes, typically made from mud brick with thatch or sheet-metal roofs, have limited resistance to strong winds and floodwaters. In Malawi, one of the NGOs interviewed for this study discussed the successes they have had improving the technical capacity of households and communities to build more resiliently. Even working with just the traditional mud and thatch, by strengthening foundations, carefully selecting soil for bricks, and altering the roof shape to better

protect the walls, homes can be made significantly more resistant. However, the projects were small and the results not widely disseminated. Many Idai-impacted communities reported they had never received such training or knowledge, though they would welcome it. In Mozambique, where the use of purchased materials to increase structural integrity is somewhat more common, community members nonetheless noted that access to and the affordability of these materials is a barrier to rebuilding more resistant houses.

In Mozambique, the government quickly established the Post-Cyclones Reconstruction Office (GREPOC) following Cyclone Idai. GREPOC completed a study in early 2020, with community input, on cyclone resistant housing design to inform the reconstruction. However, though in June of 2019, international donors pledged US\$1.2 billion²⁰ towards reconstruction, as of early 2020, GREPOC was still waiting on funding to move forward, hampering implementation of study results and slowing the reconstruction process. Humanitarian agency support is filling some of the gap, but it is not occurring at the scale or time frame needed. Consequently, thousands of families remain in temporary or makeshift shelters or in humanitarian tent communities.

Resettling displaced populations

Many of those living in temporary shelters are waiting for the question of resettlement to be resolved or on funding to be mobilized to implement resettlement plans. In Zimbabwe and Malawi, where the impacted areas were more rural, aid organizations provided food aid so that

²⁰ Reconstruction and recovery needs are estimated to be US\$3.2 billion. Government of Mozambique. (May 2019). *Mozambique Cyclone Idai Post Disaster Needs Assessment*.



Repairing road damage in Chimanimani, Zimbabwe © Karen MacClune, ISET-International

survivors could stay on their land and rebuild. However, the question of how to support those who have lost not just homes but also land, or whose lands are clearly at far greater risk than previously known, remains unanswered.

In Zimbabwe, many of those most impacted by Cyclone Idai are unable to return home because their homes and land are now gone, buried under rubble or washed away by flash floods. Others are unable to return because the risk is clearly too high to warrant rebuilding, or to restore livelihoods,

in the same location. The government is working with international experts to evaluate potential resettlement sites, looking for places safe from landslides and flooding. However, it is unclear how community members are involved in these discussions and whether their needs and concerns are adequately addressed. Certain identified resettlement sites, for example, are far from people's relatives and the graves of their loved ones. Other resettlement sites are located a significant distance from town on poor roads, or the land

allotment under discussion is insufficient to support an agricultural lifestyle. This lack of alignment between the proposed site and community needs, for either urban or rural residents, will most likely undermine resettlement success and may drive those who need to resettle into other areas, into further vulnerability, or both. Some areas where sites have been identified, lack basic services such as roads, clinics, schools, and sanitation facilities. In the absence of clearly identified appropriate lands with established services, households remain in vulnerable, flood exposed locations.

In Malawi, the government forbade humanitarian organizations to provide aid to some of the highest risk communities – villages living on low-lying islands in the Shire River – because they do not want to incentivize the residents to remain in those highly flood-prone areas. These communities have required humanitarian aid repeatedly over the past years as a result of flooding. At least one NGO rented motor boats at a significant cost to deliver aid to island communities. However, the government of Malawi is also actively learning from past attempts at resettlement that have been less successful than intended. Lessons they have learned and are considering in current resettlement plans include keeping people within their traditional areas and under the authority of their current chiefs; locating them within walking distance of existing agricultural lands and natural resources; and maintaining access to social amenities like schools, clinics and markets. Interviewees also noted that other African countries have a culture of farming low-land areas, but moving dwellings to higher lands during the rainy season and only moving back down to the agricultural areas once the imminent chances of flooding have passed. Perhaps the

adoption of this model could be a solution for some communities in Malawi.

In Mozambique, the government wants to relocate about 90,000 people away from flood prone areas, a need that was identified decades ago in response to flooding. While many impacted communities have indicated a willingness to move their homes and commute to their agricultural lands, discussions are ongoing about livelihood options, cultural aspects of resettlement, and ensuring that critical infrastructure is constructed and basic services installed. A year after the cyclone, many of the resettlement sites are still being developed and lack certain basic necessities including permanent shelter, livelihoods, and schooling options, causing some people to rebuild on their previous, more risk-prone land.

Re-establishing food security

Even as the humanitarian response in Malawi, Mozambique, and Zimbabwe began focusing on rebuilding livelihoods and long-term food security – particularly for rural communities – farmers in cyclone impacted areas required immediate and continued food assistance as Cyclone Idai destroyed crops that would otherwise have sustained households until the next harvest. However, the bulk of the humanitarian response and funding was closing out as we conducted our interviews for this study, at the beginning of the planting season and nine months post-event. Many interviewees expressed concern about what they would eat for the next three months while they waited for crops to mature. In Nsanje, Malawi, communities said they had nothing but sweet potatoes; in rural areas of the Chimanimani district, they had nothing but green bananas.



New borehole and sweet potato vine nursery installed in a Nsanje village post-flood © Karen MacClune, ISET-International

To enable households to re-establish their own crops, households needed seed to plant during the next growing season. Knowing this, all of the humanitarian organizations we spoke with that were still distributing food aid were also distributing seed, providing agricultural tools and livestock, and providing fisheries-based and agricultural technical support to impacted communities. However, in spite

of the fact that all of the responding actors know support for agricultural production is critical and were taking action, there are ongoing challenges.

In Zimbabwe, maize seed was being distributed, but the fertilizer needed to assure adequate production and yield was not provided and is likely too expensive for most seed recipients to purchase themselves. In Mozambique, programs providing

seed to farmers encountered challenges with importing and certifying seed, slowing the delivery of aid. These challenges put the intent of the aid – solving ongoing food security and nutrition needs – in jeopardy. Failure of these seed-provision programs will leave the target populations, once again, severely malnourished and in need of future

humanitarian aid. While some longer-term programs are providing seeds, tools, support to livestock and fisheries-based livelihoods and technical assistance, interviewees in Mozambique reported a need to extend the response into the recovery phase, through expanded response funding, to address pressing food security issues.

BOX 4. A STORY FROM MALAWI: HOW CLIMATE CHANGE IS IMPACTING RAIN-FED SUBSISTENCE AGRICULTURE IN SOUTHEAST AFRICA

For rainfed, subsistence farming, finding the right planting moment is critical. Seeds planted too early, before steady rainfall can sustain their growth, will fail to germinate or die as seedlings, risking loss of the entire harvest. Planting too late risks heavy rainfall or pest outbreaks, impacting the crop before it is harvested.

Finding this right moment for planting has become ever more challenging for villagers in Nsanje, Malawi who are already facing the consequences of climate change. The rains, which used to be very predictable, are now erratic, complicating decisions about when to plant. Usually, smallholder farmers would plant following the first rain, counting on the rains to continue. However, as rainfall patterns shift and dry spells become more common, planting after the first rains is becoming increasingly risky. For example, at the beginning of the first planting season post-Idai in late November 2019, smallholder farmers planted seeds after the first rains, only to have dry conditions return. As a result, 10 days later, when we arrived to conduct interviews, farmers were expressing fear that

the seed would fail to germinate, requiring them to replant. Because the seed had been provided by humanitarian organizations, they were uncertain if they would get more.

Dry spells are also becoming increasingly common in the middle of the growing season, often just as the corn is tasseling which stunts kernel development and reduces yield. Pumping groundwater, a short-term solution for such challenges, is itself becoming less viable. The water table is dropping (most likely due to overuse) and small pumps, which facilitated small irrigation, are no longer functioning. Larger, more expensive solar pumps are now required to continue the same type of small irrigation. Farmers are also facing damages to their crops from more intense rains and from fall armyworm infestations, which have attacked their crops just before harvest for the past three years.

Given the multiplying and intensifying challenges, the resources currently available are insufficient. New solutions are needed to support smallholder farmers in Malawi and across the region.



An overview of Kopa Business Centre, located in a flood plain, which was destroyed by Cyclone Idai in Zimbabwe © Practical Action

Reconstruction of critical services

All three countries are also putting significant effort into the reconstruction of critical services. The water distribution systems in Beira, Mozambique, were quickly restored post-storm, in part due to the presence of WASH organizations with skilled staff readily available to act immediately post-event. And the regional Instituto Nacional de Meteorologia (INAM) headquarters, whose building and equipment were completely destroyed by Idai at landfall, moved into new offices and set up new equipment. The rebuilding of roads has restored the access of many isolated communities to external markets, healthcare, and other key services. In

Buzi, Mozambique, for example, a major road into the community was destroyed for months forcing people to rely on boats for transport to the hospital in Beira and limiting their ability to sell their goods in external markets. The repair of the main route reestablished this access, expanding their economic opportunities²¹. Similarly, the main road into Chimanimani has been prioritized by the Zimbabwe government and repair to both bridges and the narrow mountain road down into the town were underway within six months of the storm.

²¹ For many, the restoration of this road still means a very long commute by foot or by bicycle.

SECTION IV.

Key Insights

Lessons from the response and recovery to Cyclones Idai and Kenneth highlight opportunities for building resilience, both in terms of what worked well and where there is room for improvement. Figure 7 illustrates the recurrent themes interviewees and secondary sources highlighted regarding the cyclones, as well as the interconnected nature of those themes. Core thematic areas include WASH programming, the protection of critical infrastructure (e.g. communications, transportation, utilities), early warning systems, resistant housing and resettlement, livelihoods and food security, and long-term DRR programming. Lessons highlighted by interviewees to reduce future risk cross multiple sectors and levels, including communities, humanitarian agencies, governments, and individuals.

In addition to identifying recurrent themes and entry points for building resilience, Figure 7 also includes those themes which the PERC team expected to discuss, based on past PERCs and experience, but which did not emerge strongly from interviews. These include the role of the individual in DRR, the importance of natural capital and social capital in building resilience, and access to markets

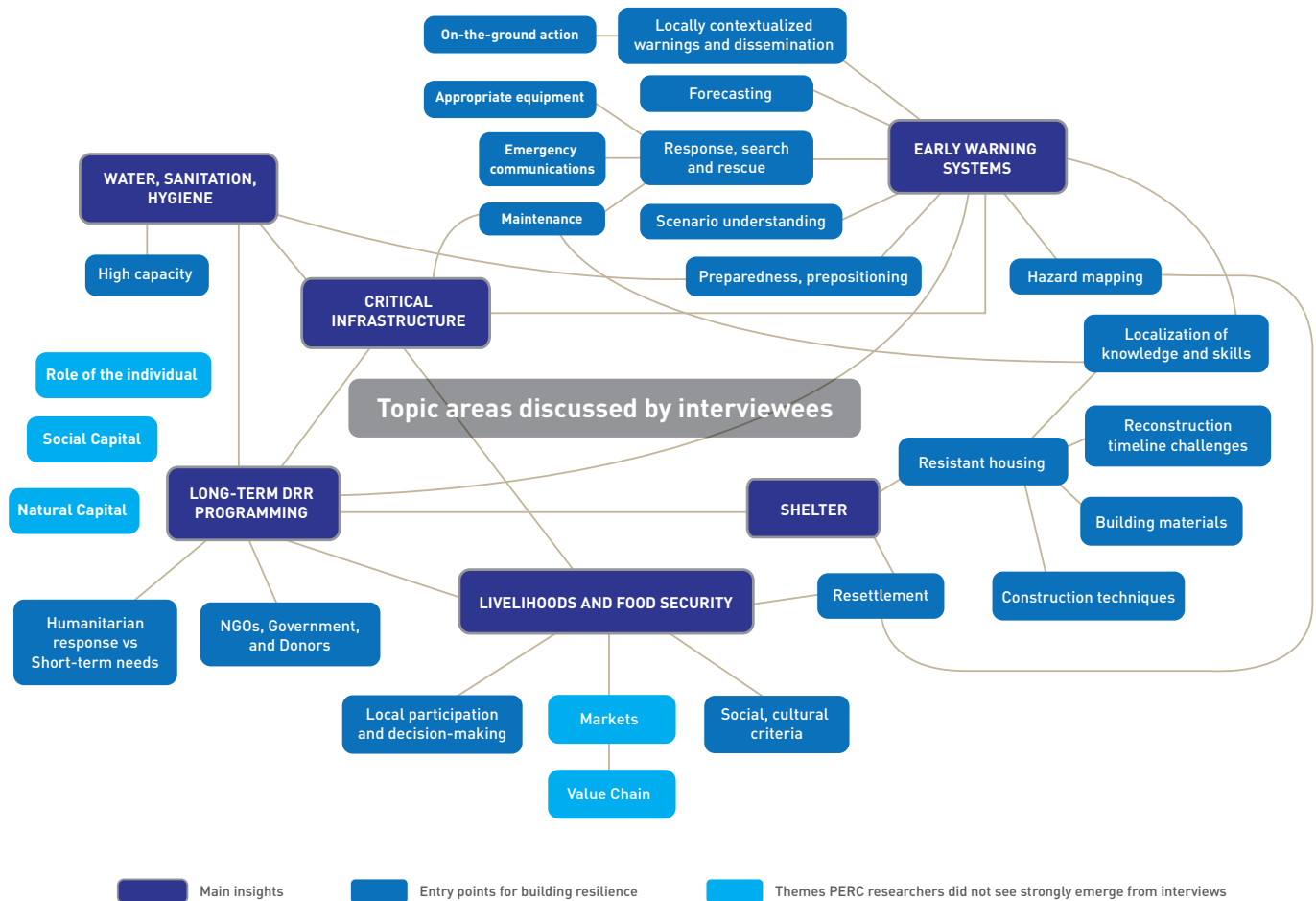
and the creation of higher-value end products as a key strategy for building livelihoods and reducing vulnerability. We do not know why these topics were not highlighted – whether people take for granted that these are known issues, whether they are so intractable people do not even bother to discuss them, or for other reasons entirely. However, based on learnings from past PERCs and past experience, we know that many of these themes are key elements to effect change and build resilience. We have, accordingly, incorporated them into our recommendations in Section V.

Early Warning Systems

While flooding forecasts remain a challenge, particularly cyclone-induced flooding, improvements in weather forecasting accuracy have improved early warning capacity. Authorities in all three countries were able to disseminate warnings about the cyclones several days in advance of landfall, coupled with information on the types of conditions the storms would bring. Challenges remain, however, in linking early warning to early action. In particular, communities we talked with received warnings, but many community members did not know how to interpret those warnings.

FIGURE 7

Mind Map of topic areas discussed by interviewees



Cyclone 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 communities on the ground had seen before or could imagine. This meant that for many who received the warnings, they were unsure how to act and could not use past experience to inform their actions. 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, different, or in new locations as compared to anything previously experienced. Additionally, for many communities, the impacts of climate change, including recent droughts and floods, have eroded their absorptive and adaptive capacities, compromising their ability to transform early warning into early action.

Equally problematic, communities in Malawi indicated there were a few things they could have done differently with two to three days warning – such as securing their roofs and moving cooking equipment inside – but their overall outcomes would not have been significantly different. What would have been most useful was greater clarity regarding the type and extent of impacts. Many villages outside the areas most typically flooded, noted they would have evacuated to shelters if they had realized how heavily they would be impacted.

Many of the impacted communities in all three countries lack protective infrastructure; some of the communities we talked with, even if they had known to take shelter, had no storm-safe, accessible structures in which to shelter. In Zimbabwe, communities indicated that, to this day, they still do not know how to stay safe in the type of conditions Cyclone Idai brought. There is clear need, particularly given how climate change is leading to new and more intense weather events, for significant community support around risk identification, development of risk reduction strategies including evacuation plans, and the development, with communities, of early warning messages that they understand and know how to act on.

WASH

There were clear successes in all three countries around WASH programming in the immediate preparedness and response phases, and which are now being carried into the reconstruction and recovery phases.

Forecasting in Mozambique supported early action by the Red Cross. Staff and volunteers distributed water and sanitation supplies to some of the

more vulnerable communities in Sofala province before the cyclone hit, enabling a much more rapid distribution of relief supplies post-impact. Years of investment in urban drainage systems in Beira reduced the flood impact in comparison with areas outside the drainage network. Following landfall, humanitarian organizations rapidly responded to distribute thousands of dignity and sanitation kits, and constructed latrines and sanitation facilities. To address a cholera outbreak following the cyclones, government and humanitarian agencies provided water purification supplies and education on how to disinfect wells, established cholera treatment centers, and rapidly rolled out a cholera vaccination campaign, which ultimately reached 1 million people across Mozambique and Zimbabwe. These efforts, and the rapid restoration of the water distribution system in Beira, helped to contain the spread of cholera. The number of new cases reported in Sofala province declined from approximately 400 cases per day to four cases per day between March 27 and early May 2019²².

Overall, WASH was the strongest of all the response sectors. Part of this success was due to existing large-scale WASH programming already in place in response to earlier needs and emergencies. There are multiple organizations in southeast Africa specializing in WASH, with skilled staff and sufficient equipment on hand. The “inherent pre-positioning” of staff and supplies extraneous to explicit disaster planning, with associated pre-existing networks which facilitate coordination and collaboration with relevant government institutions in the event of a disaster, was fortuitous and proved highly valuable in 2019. However, secondary sources

²² World Health Organization. *Tropical Cyclones Idai and Kenneth Mozambique Situation Report 06*. (10 May 2019). <https://www.afro.who.int/sites/default/files/2019-05/WHOSitRep6Mozambique10May2019.pdf>



Flood victims queue to access services from a Health Surveillance Assistant in Chikwawa Malawi © Flooding in Malawi flickr photo by Arjan van de Merwe/UNDP shared under a [Creative Commons \(BY-NC-ND 2.0\) license](https://creativecommons.org/licenses/by-nc-nd/2.0/)

and interviews noted that WASH efforts were more focused on quickly containing the consequences of loss of critical WASH infrastructure, rather than on reducing the risk of loss of the infrastructure itself. In both the areas impacted by Idai and Kenneth, numerous boreholes, wells, sanitation systems, and health centers were inundated, leading to disease outbreaks that were suppressed only through rapid humanitarian mobilization and heavy investment in emergency response.

This highlights a critical need to invest in protecting WASH facilities so that they remain operational even in extreme events. Fortunately, this type of

investment is now occurring, at least on a small scale, in the reconstruction phase. In Mozambique, for example, some humanitarian agencies are considering how to rebuild sanitation facilities to protect them from future floods while in Malawi and Zimbabwe, they are constructing walls around new boreholes to prevent floodwaters from entering. This readiness to learn from past events and to adapt construction approaches, coupled with funding to implement the required construction, has the potential to significantly reduce future WASH challenges.



Critical Infrastructure

The breakdown of critical infrastructure – including water supplies, sanitation, roads, hospitals and clinics, and communication – in impacted locations in Malawi, Mozambique and Zimbabwe exacerbated the impacts of the cyclones. The loss of roads in Chimanimani and Chipinge, Zimbabwe, for example, hampered the ability of responders to provide immediate aid for weeks following the cyclone. Similarly, in Cabo Delgado province in Mozambique, the destruction of key bridges and roads limited responders' access to critically impacted areas. The loss of communication infrastructure in Beira and Buzi, Mozambique, disrupted warning systems and impeded emergency response during the floods. The failure to maintain rescue equipment

compromised Red Cross volunteers' ability to rescue flood victims. Damage to hospitals and clinics complicated responders' ability to provide care and to contain post-flood diseases.

On the other hand, where infrastructure and equipment was maintained and remained functional, and where advance preparation to address the consequences of critical infrastructure failure was conducted, impacts were less severe. For example, the drainage system in Beira worked, preventing flooding in some areas. Though the storm disrupted the water treatment and distribution system, the city was able to quickly restore it, reducing potential water-contamination issues. Pre-positioning of rescue boats and equipment in Malawi allowed disaster response to begin immediately in spite

of flooded roads and lost bridges. Both these challenges and successes highlight the ongoing need to identify and protect critical infrastructure and develop contingency plans for response to potential failure.

Shelter

Localized knowledge, skills, materials and capacity are a vital aspect of resistant housing. Across the region impacted by Cyclones Idai and Kenneth, the majority of rural and peri-urban residents live in homes they have built themselves from locally available materials. The storms highlighted the vulnerability of this housing. However, expense, lack of access to building materials, and a lack of timely financial support from government or other agencies is preventing the widespread construction of resistant homes. The scale of the challenge is also at the heart of the issue – millions of families across the three countries live in non-resistant housing. It is unrealistic to propose that they solely use more resistant building materials. Instead, more incremental and systemic support is needed.

One of the clearest entry points for increasing the resistance of housing is through the dissemination of more resistant building techniques. Many individual households and communities that were impacted by Idai and Kenneth are already focusing on how they can make the structure of their homes more resistant. For example, extending their roofing to keep mud brick walls dry, improving the quality of the sand they use in their foundation, improving how roofs are anchored to the walls, etc. are some tangible measures that can improve resistance. However, many other households and communities reported lacking clear information on what they could do to further improve the resistance of their homes. More widespread identification and

dissemination of construction best-practices could do much to fill this need.

Resettlement

In the wake of the cyclones, 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 have been repeatedly impacted by floods, communities that lost their land due to flood or landslide damage, and communities or households that the cyclones illustrated to be far more vulnerable than previously known.

Key considerations that interviewees identified in thinking about how and where to resettle communities include:

- Providing adequate, secure, permanent housing that meets the needs of the residents;
- Resettling communities in areas where they can continue, and ideally improve upon their existing livelihoods;
- Maintaining social networks and structures, such as moving people within their traditional authority areas so they remain under the authority of the same chief;
- Assuring social amenities like access to water, markets, schools, clinics, and transportation corridors;
- Ensuring the community is willing to move and has an active, influential voice in the decisions being made; and
- Recognizing the time and effort needed to put other pieces in place before the community is moved.

Interestingly, most of the interviewees did not question that these communities should be moved, and the communities we talked to expressed a willingness and interest in being supported to move. However, we also heard stories in Malawi, for example, of unsuccessful government attempts to relocate villages. Unsuccessful relocation pushes those relocated into greater vulnerability, wastes money and efforts because relocated households do not end up staying in their new location, or both. The reality that relocation fails all too often, at significant cost to both the government and those relocated, heightens the urgency of assuring that any post-Idai relocation efforts are done well.

Livelihoods & Food Security

Eighty percent of the population in Mozambique and Malawi, and 70% of the population in Zimbabwe rely on rainfed, subsistence agriculture for their livelihoods – livelihoods that are becoming increasingly more vulnerable due to climate change and the impacts of extreme events such as the flooding from Cyclones Idai and Kenneth. For many smallholder farmers these vulnerabilities are further exacerbated by the lack of flood-resistant storage for harvested crops and seed. This leaves households at extreme risk. Their core assets are their homes, the food and seed they contain, and their arable land, all of which are climate vulnerable. Years of shocks, including floods, droughts, and national economic crises have pushed people into extreme vulnerability.

Potential solutions, such as access to inputs that might improve productivity beyond solely subsistence, better access to markets, or the ability to process crops to provide higher value end products are limited. Consequently, when

households and communities are impacted, many are entirely dependent on humanitarian response to address immediate needs and to replace what has been lost. To meaningfully adapt the cycle, a holistic approach that bridges between humanitarian response and longer-term development programming focused on market development is needed.

Long-term Disaster Risk Reduction

The challenges highlighted in the above insights underscore areas that can be strengthened now, via specific interventions and/or programs, to reduce harm from future events. In particular, they highlight the need for increased ex-ante DRR and resilience building activities and for applying a longer-term, more integrated perspective to response and recovery programs through linking them with existing development programming. Cyclone response programs in all three countries are facing funding challenges that limit their ability to respond over the longer term. Because of the short time frame of much of the disaster response funding, for example, support for food assistance in all three countries ran out before farmers were able to complete their harvest, leaving them with very little to fall back on.

Overall, an integrated perspective – i.e. integrated livelihoods and response programming, basin-scale engagement, and strengthening early warning and disaster response countrywide – would support longer-term resilience building. Unfortunately, while the value and need for this approach is widely recognized, it is currently under-emphasized and under-funded. We saw a clear divide between the development and humanitarian sectors in the Cyclone Idai and Kenneth response, yet the need



Chimanimani landslide damage caused by Cyclone Idai rainfall. Google Earth © 2020 CNES/Airbus © 2019 Google

to more directly sequence 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 committing to new ways of working, including joint assessment planning and multi-year funding. Yet the Idai and Kenneth response indicates that action still lags behind intent, underscoring the need to follow-through on commitments with action.

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Before the storm we were raising our children to be engineers, doctors, and nurses, but now we can't do that. The storm has pushed us backwards.

- Community member in Mozambique

SECTION V.

Recommendations

Improve flood forecasting

One of the largest gaps seen in the preparedness, early warning and response to the cyclones was with respect to flooding. The wind speed, storm track, and storm surge forecasts for both Idai and Kenneth were excellent – they were accurate, timely, and they were shared across national boundaries. Precipitation forecasts were reasonably good – it was clear there would be torrential rains, flooding and flash flooding. There was inadequate information, however, regarding how much flooding, where it would flood, when it would flood, and how long it would take floodwaters to drain. Both communities and national governments were surprised, and first responders were unprepared for the reality of the storm.

The challenge with flood forecasting is that it is reliant on an accurate estimate of rainfall, which is notoriously difficult over mountainous terrain and for cyclone-associated rainfall. Real-time flood forecasting warning requires an accurate, spatially distributed network of real-time rain gauges and/or stream gauges. In southeastern Africa, real-time rain gages at the density and spatial and temporal accuracy needed are unavailable. Most of the stream gauges that might have been able to somewhat

fill this gap were washed away. In a region with as great a risk of flooding as the floodplains of Malawi and Mozambique, significantly greater investment is needed both in the technology and capacity to generate and issue advance flood warnings.

Enhance existing Early Warning Systems

Early Warning Systems in all three countries were relatively strong at the national level, and there were well established mechanisms to transmit warnings down to the community level, but those messages failed to generate the action needed to protect lives and assets. There is a clear need to strengthen EWS early warning systems in all three countries to provide contextualized, actionable warnings. This will require working with communities on monitoring, development of messages, and message dissemination with the goal of improving message comprehension and life-saving action.

For this to be effective, it can be linked to existing community-based DRR efforts, which are already working to support the identification of context specific preparedness or early action activities that reduce communities' risk. In some areas, these are linked to the development of community



Group discussion in Malawi © Karen MacClune, ISET-International

contingency plans. Government or humanitarian programs can then facilitate the establishment of mechanisms to leverage these collective strategies to support communities in reducing their risk and meeting their own needs. This can be accomplished through contingency funds, for example, which are linked to the creation or strengthening of existing informal safety nets.

These efforts should be paired with scenario-based approaches, climate science, and expanded hazard mapping to guide evacuation, and designation of safe, resistant shelters. Furthermore, the design and location of schools, clinics and other structures should be considered before they are built or rebuilt, such that they best provide DRR co-benefits for communities during and beyond the rebuilding phase. Cross-sectoral collaboration between

government agencies and NGOs can help to ensure that messages are reaching the individual/household level in communities, that people know how to act on those messages, and that they have the resources they need to take that action.

Incorporate community emergency planning into EWS

One of the biggest challenges posed by Cyclone Idai was how the storm delivered types of weather and weather impacts never previously seen and/or in areas that had never previously been impacted. As climate change intensifies existing weather hazards and increases risk in previously safer areas, the need for much broader dissemination of early



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

warnings and much greater awareness of potential risk is increasing. Meeting this need with already strained budgets will require more creative and efficient use of existing capacities and structures. Many of the Idai success stories center around capacity that already exists at local levels and spontaneously mobilized in response to need. These efforts could be formalized and empowered with a fairly small investment. For example, interviewees noted that existing resources, such as rural agricultural technical support (agro-techs), Red Cross activities around first aid training and school DRM clubs, etc. could be more actively incorporated into existing EWS.

Localize knowledge, technical skills, capacities, and equipment

Interviewees across all three countries relayed stories of equipment breaking down and being unable to repair it because of the cost of parts, lack of knowledge of how to repair that type of equipment, inaccessible replacement parts for equipment manufactured abroad, or all three. These stories were borne out by the clear evidence we saw outside humanitarian agencies and government offices alike, of broken-down trucks, boats, and motorcycles. Donors, institutions, and governments can maximize their investments by supporting the localization of skills, knowledge, materials,

and equipment. For example, 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. Equally important, funders need to recognize that purchasing a piece of equipment without also ensuring the budget, skills, and staff to maintain it will be a waste of money. This would require a change in many donors grant and procurement regulations and a cultural shift on the ground, from one of expecting new equipment to maintaining existing equipment, but could result in significant savings.

Rebuild homes using local knowledge and accessible/affordable materials

Across the areas impacted by Cyclones Idai and Kenneth, households are rebuilding their homes with the materials at hand - in most cases, the same type of homes, built with the same materials that failed during the cyclones. 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, could determine whether these structures survive or fail in a future 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. Timely provision of information and capacity building could inform house typologies that are more resistant yet also cost-efficient and fit the local context. Though this is happening in individual projects in the various countries, it has yet to be taken to scale.

Identify and protect critical infrastructure

A surprisingly common thread for almost all PERCs conducted globally is the lack of focus or scenario-based understanding of how critical infrastructure - including protection infrastructure (like levees, dikes and seawalls), main transportation arteries (particularly those that supply the sole or principal ingress/egress from a community, town, or core asset like an airport or hospital), power, potable water treatment, communications, and health centers - will fail in a disaster event and the cascading impacts that failure will have. Once again with Idai and Kenneth, seawalls failed, communications systems were lost, roads were inundated and bridges washed away. In Beira, the roof blew off the weather forecasting center and all its equipment was lost.

A systematic identification, hazard mapping and impact understanding for critical infrastructure should be one of the foundational components of pre-planning for disasters. As new critical infrastructure is built, there should be a review and understanding up-front about how it can be strengthened and protected to reduce future risk. 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. Donors - especially multilateral banks that often fund infrastructure - should ensure infrastructure grants and loans explicitly take these risks into consideration.

Climate resilience can be improved via scenario-based planning, conducted at multiple scales, exploring how these critical assets could be impacted and the potential consequences of that



Damages in Cabo Delgado in Mozambique © Matthew Carter, IFRC

impact. In thinking about how to protect assets, coupling or complementing structural solutions 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, concrete flood walls along Beira's coastline were heavily damaged by Cyclone Idai's storm surge. Rather than replace these with similar structures, the government and donors should explore Ecosystem-based Disaster Risk Reduction²³ solutions, such as coastal revegetation, that might provide substantially better protection over time, as sea level rises.

23 "Ecosystem-based Disaster Risk Reduction, known as Eco-DRR, is an approach where the regulatory functions of ecosystems (such as forests, wetlands and mangroves) are systematically harnessed to mitigate, prevent, or buffer against disasters." Source: PEDRR/ UN Environment Programme. (April 2020). *Ecosystem-based Disaster Risk Reduction*. <https://pedrr.org/knowledge-product/ecosystem-based-disaster-risk-reduction-eco-drr-2-pager/>

Actively engage displaced communities in resettlement decision-making processes

Resettlement is a complicated issue, requiring a nuanced balance between reducing the risk of already vulnerable populations and inadvertently increasing that vulnerability by constraining access to critical assets on which the community or individual households within the community are dependent. Giving communities a significant, meaningful, and influential role is one way to maximize successful outcomes.

Key variables that should and are being considered in post-Idai resettlement planning include using local knowledge, experience, hazard mapping,

and climate information to inform the siting of resettlement communities, 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. This would include diversification of farming techniques and crops, and training in the production of higher value end-products so that any loss of social, physical, or natural capital resulting from relocation is compensated with a decrease in underlying vulnerability.

Support livelihoods development

Livelihoods strengthening and diversification is a critical element to building resilience not just for communities that are being or will be resettled, but across broad swaths of rural Malawi, Mozambique, and Zimbabwe. The majority of the populations of all three countries are subsistence farmers, locked into generational cycles of poverty. The consequences of climate change and the impacts of the cyclones make it even more difficult to break free of these cycles and have a significant impact on people's capacity to adapt and recover. Any efforts to meaningfully reduce that poverty will require substantial, widespread livelihoods development, including diversification of farming practices and crops, training in the production of higher-value end products and strengthening markets and supply chains. This needs to be paired with adaptation or rehabilitation approaches that take into account the capacity level of impacted communities.

Realistically, given changes in observed and anticipated rainfall variability, supporting small-scale

irrigation works to extend growing seasons, coupled with an expansion of crop types, simple crop processing and strengthening access to markets will all be needed. Constructing safe storage buildings could help protect smallholder farmers' harvests. However, given limited resources, a communal community warehouse may be a more viable option. While this may not be a common practice in the region, sensitizing and educating communities about this option could be a concrete step forward.

Expanding capacity to move beyond basic crop production to producing end products, coupled with a whole market approach that supports the commercialization of these end products and integrates them into value chains, is also needed. This will be most effective if programs delivering this type of support are jointly developed with the communities in question, taking into account and utilizing local knowledge, capacity, interest, and resources. Diversification of livelihoods beyond agriculture, into non-natural, resource-based activities can also help to decrease vulnerability from extreme weather events.

Invest in ecosystem restoration as a key component of risk reduction

Environmental degradation is contributing to increasing vulnerability and flood risk in Malawi, Mozambique and Zimbabwe. In terms of flood risk, upper-basin land use practices are resulting in both increased erosion (which increases downstream siltation) and increased downstream flooding due to both siltation and faster runoff. In Mozambique, the impacts of climate change are also contributing to sea level rise and increased coastal erosion, which is



Boarding a rescue boat of Malawi Defence Force © Flooding in Malawi flickr photo by Arjan van de Merwe/UNDP shared under a [Creative Commons \(BY-NC-ND 2.0\) license](https://creativecommons.org/licenses/by-nc-nd/2.0/)

increasing the flood risk from storm surge in low-lying areas along the coast and in river deltas.

Investment in environmental restoration and management practices are needed to help reduce these risks. Coastal restoration activities, such as restoring mangroves, for example, can reduce the risk of flooding by preventing soil erosion. Within a river basin, restoration efforts, particularly in the highlands, can help to reduce downstream flood risk. Linking these efforts through a basin-scale ecosystem management initiative could reap additional co-benefits such as: reduced soil erosion and improved soil moisture, which together, can potentially improve crop yield; improved

groundwater recharge; and improved water quality. These coastal and basin-scale efforts should be integrated into DRR programs and coupled with early warning, early action systems that connect communities within the same river basin.

Integrate DRR and humanitarian efforts, leveraging existing local capacities and resources

The majority of the challenges and recommendations we saw and heard in this study have a DRR component. If disaster response

and humanitarian support were ever enough, they certainly are no longer. The global need for, and costs of humanitarian response are rapidly outpacing the ability to provide it and climate change is making the challenge worse. This is not a new problem, nor is it one that has not already been recognized. Accordingly, the recommendations here are drawn from what we heard in our interviews regarding particular opportunities for southeast Malawi, Mozambique and Zimbabwe, and are rooted in the recognition that integrated DRR and humanitarian efforts should build on existing local institutions and practices.

Primary among those, is to support DRR mainstreaming by creating or strengthening DRR communities of practice to share lessons and successes. In particular, in the post-Idai reconstruction phase, the convening of communities of practice can provide a forum for sharing successes, connecting planned activities, leveraging the potential to build co-benefits into these activities, and to improve the overall efficacy and cost-efficiency of recovery activities. 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. Such an approach could serve as an example for the region as a whole, to take a more comprehensive approach for building back better while reducing future risk at the same time.

At the national level, governments should work to incorporate DRR into recovery and reconstruction plans, as well as into existing or new policies and practices (i.e. implementing hazard resistant building codes, promoting nature-based solutions for flood management, promoting drought and flood-resistant crops, etc.). International actors and

donors should commend these efforts and provide technical and financial support.

Ultimately, as a global community, we want to transition from suffering damage and loss and cobbling together a working recovery, to avoiding damage and loss altogether. Doing so will require donors to commit to longer-term funding that supports lasting change and reduces underlying vulnerabilities. It also requires further collaboration between humanitarian and development donors on how they fund response and programming. Rather than seeing humanitarian response and development as separate domains, the global community must recognize that humanitarian response is required in areas where development and DRR have been insufficient and where, consequently, delivering aid alone will be a never-ending effort. Instead, stakeholders must begin to think creatively about where development and DRR can be integrated into or efficiently sequenced with humanitarian response, and donors should commit to and follow through on funding both. While ultimately, this may mean spending more upfront, the outcomes over the longer term should reduce the amount spent on response and recovery.

CONCLUSION.

Looking Towards the Future

The insights and recommendations outlined here, highlight actions and pathways for leveraging existing strengths to reduce current and future risks, in the three countries in this review and around the world. Underpinning these findings is the recognition that in countries where socio-economic vulnerabilities converge with degraded natural environments and a changing climate, the process for building resilience and reducing risk will be a long and arduous one. It is, however, a necessary one for interrupting cycles of poverty and for moving communities from “bouncing back” to their previous states of vulnerability, to one that moves them forward.

A key aspect of this will be to change practices at the community level – through diversifying livelihoods, facilitating the construction of resistant shelters, working with communities to develop inclusive warning systems, localizing equipment and maintenance, etc. – and at the national level via policies and practices. Equally as crucial, however, will be to shift how humanitarian response aid is provided so that the cycle of disaster-response-recovery to previous vulnerable conditions, is disrupted. Especially in the face of a changing climate, we need to more rapidly transition from

our initial humanitarian response to holistic, longer-term, integrated DRR and development.

Shifting towards such longer-term engagement, however, requires dedicated development funding and coordination with a transformed humanitarian funding model that moves 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 practices that are locally tailored, risk-informed, and climate-smart.

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 actively and intentionally across these three work areas, and implementing the actions that are needed.



ACKNOWLEDGEMENTS

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Thanks to those who took the time to meet with us and to provide their insights; to those who provided feedback and reviewed drafts of the reports; and to those who helped us to refine our thoughts. This study would not have been possible without their input.



This report presents a snapshot of what happened during the 2019 Cyclones Idai and Kenneth. While the goal of the PERC is to present a birds-eye view of an event, it is not comprehensive – much more could be said on the cyclones and on the degree of resilience of Malawi, Mozambique, and Zimbabwe’s preparation for, response to and recovery from the cyclones. What this report does provide is a review of the systems and actions that helped to reduce damages, while also delving into the factors that constrained people and systems’ resilience. It also highlights lessons learned and points towards opportunities for increasing resilience to future hazards.

This publication has been prepared by ISET-International, working with the support of the International Federation of Red Cross and Red Crescent Societies (IFRC), Practical Action, and Zurich Insurance Company Ltd. This publication has been produced solely for informational purposes and the opinions expressed herein are those of the authors. All information contained in this publication has been compiled from reliable and credible sources, but no representation is made by ISET-International as to their accuracy or completeness.

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April 2020

Published by:
Institute for Social and Environmental Transition-International, Boulder, CO USA

Recommended citation:

Norton, R., MacClune, K., and Szönyi, M. (2020). *When the unprecedented becomes precedented: Learning from Cyclones Idai and Kenneth*. Boulder, CO: ISET International and the Zurich Flood Resilience Alliance.

For a downloadable PDF of this report, please visit: <https://www.i-s-e-t.org/perc-cyclone-idai-2019>