# Gendered impacts of Climate Change in Africa: The case of Cyclone Idai, Chimanimani, Zimbabwe, March 2019.

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***Abstract***

*This paper seeks to discuss the nexus between climate change and social relations in Africa using a case study approach of Cyclone Idai in Chimanimani district, Zimbabwe. Disaster induced displacement remains another affirmation of the flawed notion of pre and post-disaster preparedness and human security as a gendered caveat. This paper theoretically and empirically unravels the incessant feminisation of socio-economic insecurity in the contexts of forced displacement post Cyclone Idai. The researcher alludes to the prevalence of epitomising gender dichotomies of victimhood among displaced men and women, yet again framing social relations and human security on masculine-feminine asymmetries. The article empirically espouses feminized intricacies of security from the everyday experiences and narratives of men and women in the case study area as a basis for pragmatic solutions that should inform strategies and policies meant to deconstruct the androcentric anchorages militating against the equitable strategies in post-displacement contexts. Methodologically the paper proceeds through a qualitative research orientation where in-depth interviews and observations constituted the major data collection tools. Chief among the numerous findings of this study was not only that post-displacement scenarios are reminiscent of post-conflict contexts in terms of gendering human security, but, that any effort to emancipate women should pragmatically embrace gender as an essential variable.*

**Key words:** Climate change, displacement, vulnerability, feminism

## Introduction

As a primary factor of social organization, gender shapes the social worlds within which natural events occur. Not surprisingly, gender differences are found in studies of emergency preparedness, voluntary action, emergency communication, the division of labour, post-traumatic stress, and coping strategies, among other areas (Fothergill, 1996). Masculinity norms may encourage risky action during the search and rescue period, debris removal, and reconstruction, and deter men from approaching relief agencies or seeking counselling later (Fuller, 1994).

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Natural disasters have affected every continent in the world. Asia has the highest frequency and causalities. This is due mainly to Asia's large and varied landmass with multiple river basins, flood plains, mountains, active seismic and volcanic zones. There are also high population densities in the region. In total, Asia has been hit by 2,778 disasters over the past 20 years, with 3.8 billion people affected in addition to nearly 841,000 deaths. Within Asia, the Southern, Eastern and South-Eastern regions were hit most frequently by natural disasters, recording 2,481 events or 36% of all disasters recorded worldwide between 1994 and 2013 (IPCC, 2014). In 2017, hurricanes Harvey, Irma and Maria caused devastation in the Caribbean and the Southern United States. (Sawada and Takasaki, 2017) The nature, severity and occurrence of tropical storms has increased over the past 35 years globally (Climaste Change, 2013). Total occurrence of reported natural disasters increased steadily from 141 events in 1980 to an all-time high of 527 events in 2000. Despite a decline in frequency since then, a continuous increase in the intensity of floods and storms resulted in a total of 377 disasters in 2015, which is 1.2 times higher than the 35-year average (of 314 events per year) (CRED, 2015). Of the total 11,512 natural catastrophes over the 1980-2015 period, 79% took the form of weather-related extreme events, such as storms, floods and droughts. Of the remaining, 12% represented biological events, and 9% fell into the category of geophysical events such as earthquakes, tsunamis and volcanic activities (Cavallo, 2010).

Floods represent the most common type of natural disaster, and overall, about 80% of natural disasters are weather-related (IPCC, 2014). Emerging economies are significantly more exposed than developed countries. The average annual damage from natural disasters over 1980-2015 was 1.5% of GDP in emerging markets versus. 0.3% of GDP in developed economies. (Bova, et al, 2016). From 1970 to 2008, over 95% of deaths from natural disasters occurred in developing countries (IPCC 2012). In the decade 2000–2009, a third of global natural disasters and almost 80% of deaths occurred in the 40 countries that received the most humanitarian aid (Kellet and Sparks, 2012). Over the 1980-2015 period, the five countries with the highest annual loss in percent of GDP globally were Mongolia (20.1%), Maldives (18.5%), Belize (9.3%), El Salvador (8.5%) and the Solomon Islands (8.0%) (IPCC, 2014). Due to the lower level of private-sector catastrophe risk insurance in developing economies, the provision of post-disaster relief, reconstruction and rehabilitation remain largely a government responsibility, which often results in significant fiscal burden for the government (Stern & Nichollas, 2007).

Tropical Cyclone IDAI, developed on the 5th of March 2019 initially as a tropical depression near Maganja da Costa in Zambezia Province in Mozambique. It moved up to Niassa Province within Mozambique and turned towards southern Malawi where it caused heavy rain leading to flooding. The Republic of Malawi declared a disaster on the 8$^{th}$ of March 2019, the Republic of Zimbabwe declared a disaster on the 16th March 2019 and the Republic of Mozambique declared a disaster on the 18th March 2019 (UNOCHA, 2019). The tropical depression then returned to the Mozambique Chanel, where it gained momentum and became a Tropical Cyclone IDAI. The Tropical Cyclone IDAI curved back to Mozambique's coastline and made landfall near Beira city on the 14th of March 2019. On the 15th March the eye of the Tropical Cyclone was located

approximately 25 km away in the north-west of Beira, with maximum sustained winds of up to 167 km/h. Heavy rainfall, strong winds and storm surges estimated at heights of 2.5 metres were recorded in Beira and sweeping over the coast of the Sofala region. It further, moved westwards towards eastern Zimbabwe on subsequent days, with highly destructive impacts. It has been classified as the worst Tropical Cyclone to hit the SADC region in recent history. A heavy rainfall alert was issued by the SADC Climate Services Centre (CSC) on the 4th of March 2019, which was subsequently followed by advisories on the occurrence of Tropical Cyclone IDAI. The floods caused by the Tropical Cyclone IDAI have affected 3 million people in the Republics of Malawi, Mozambique and Zimbabwe leaving 839 people dead (SADC, 2019). This paper documents the pervasive influence of gender dynamics in coping with disasters, focusing on vulnerability complexities.

## Methodology

Methodologically the paper proceeds through a qualitative research orientation where in-depth interviews and observation constituted major data collection tools. Chimanimani District lies in the eastern province of Manicaland in Zimbabwe. It is bordered by Mozambique in the east, Chipinge District in the south, Buhera District to west and Mutare District to the north. The District has an estimated population of 133 810 (ZIMSTAT, 2012). Slightly more than half the population (52%) in the district are females. Chimanimani is the second smallest district out of seven in the province, yet potentially the richest with abundant natural resource reserves that include forests, fertile soils and precious minerals such as gold, diamond, lime and copper. Three areas in Chimanimani 21 wards namely, Charleshood farm, Kopa Growth Point and Chimanimani Urban were purposively selected to participate in the study. Charleshood river burst its banks resulting in the displacement of villagers in Charleshood farm. Whilst Nyahode river at Kopa Business centre also burst its banks. Resulting in flooding of Gata Police Camp and surrounding areas. Whilst Chimanimani Urban was the most affected considering its dense population, coupled by the rampant destruction of infrastructure which left the community vulnerable. From each area, 4 in depth interviews were conducted, thus 16 local residents participated in the study. Key informants from Civil Protection Unit, Environmental Management Agency, District Administrator and Chimanimani Rural District Council were purposively selected.

## Literature Review

### Disasters and Gender: A Theoretical Analogy

Traditional gender roles that confine women to reproductive tasks, low-yielding agricultural practices and climate vulnerable livelihoods mean their activities are more likely to suffer from climate variabilities (Dankelman, 2010). Gender disparities exert powerful differences within societies worldwide, even in the field of disasters. Women and men are not merely at risk because of their location in time and place (Bankoff, 2018) but because of a complex mix of influential

factors that include "differentiated roles and responsibilities, skills and capabilities, vulnerabilities, social relations, institutional structures, and long-standing traditions and attitudes (Obcarskaite, 2014). These social forces are thought to shape different behavioural tendencies, including those related to the ability to anticipate, prepare for, respond to, and recover from disasters (Wisner, et al 1994). The interest and recognition of different attitudes and behaviours among men and women in the wake of environmental problems have origins in the 1990s (Gutteling & Wiegman, (1993); Greenberg & Schneider, (1995); Riechard & Peterson, (1998)). Increased interest in gender inclusion in the disaster context occurred during the International Decade for Natural Disaster Reduction (1990–1999); however, gender-specific guidelines were missing. In 2000, the special session of the UN General Assembly, "Gender equality, development and peace for the twenty-first century highlighted the inefficiencies and inadequacies of existing approaches in responding to disasters (Gomez, 2006). Thus, the need for explicitly incorporating considerations on gender into disaster prevention, mitigation, and recovery strategies has been increasingly emphasized. Several researchers have reported men's higher confidence in their proactive behaviours during an emergency, rating their level of self-preparedness as significantly high (Barberi et al, 2008; Armas, 2008). This behaviour may at least in part be driven by the social role that men usually play within the family context.

A gender studies perspective views disaster as a gendered-constructed process. This understanding has carried with it a very important normative message: that to respond to those in need during a disaster, gender needs to be considered as an integral factor. Thus, the conceptualization of disasters in gender studies has been tasked with providing argumentation on the gendered aspects of a disaster. Contributions from feminist perspectives, have pushed for disasters to be understood in terms of the weaknesses and determinants within a society that determine the level of vulnerability. A study in Iran concluded that different aspects of a disaster were manifested through different aspects of gender. In the context of earthquakes in Iran, it was described that a woman is present in society in different ways; namely, as an individual who experiences the disaster, as a member of a family, and as part of a community (Nakhaei et al. 2015). Using these themes, Nakhaei et al. identified key needs of Iranian women affected by the earthquakes. By understanding the status of gender within the Iranian context, an appropriate disaster response could be designed and implemented. This gap in perception and goals for planning needs to be addressed. Often it can lead to an uncomfortable prescription of imposing normative values or realigning gender roles and requirements onto a foundation that is not sustainable. Positive social transformation related to gender is possible in the context of disaster settings. The Nepalese civil war conflict offers a long-standing example. Traditionally Nepalese widows were required to wear a white sari. However, following an armed conflict lasting from 1996 to 2006 and causing over 15,000 deaths, many women became widows. During the post-conflict era, widows challenged the centuries-old entrenched belief system surrounding the status of women and resisted the practice of the 'white sari' (Yadav 2016).

Within a gendered framework, vulnerability is a temporal phenomenon. Vulnerability is addressed to identify strategies to counteract the social factors that are structuring the ways that vulnerable groups are susceptible to risk and harm. Following on, vulnerability highlights that there are two elements to consider from a gender studies perspective about disasters; namely that the disaster is gendered and the experience of the individual during the disaster is gendered. A very contemporary aspect of disasters through a gender framework is the systematic recognition of multiple identities. (Enarson et al. 2007, 130). In this sense, the concept of disaster continues to develop in terms of its larger narratives that embody lived experiences and a continuous spectrum of social processes.

## Climate Change and Development

The risk and impact of major disasters have been exacerbated by climate change, growth in population and urbanization. These risk multipliers combine with other underlying factors poverty, poor governance, and a degraded infrastructure which further increase the severity of disaster impact on communities and populations. Disasters can be particularly devastating in poorer areas that are not as able to respond, putting a significant strain on humanitarian efforts to meet the needs of affected populations (UN, 2017). Climate change and associated stressors influence human development through their support or destabilization of the livelihood systems of the poorest and most vulnerable people. There is now a broad scientific consensus that climate change is unavoidable (IPCC, 2007). Recent evidence and projections indicate that global climate change is likely to increase the incidence of natural hazards, including the variability of rainfall, temperature and occurrences of climatic shocks (IPCC, 2012). Climate-related issues and farmers' livelihood strategies are different in different parts of the world. For instance, many farmers in Nepal and north east India suffer from droughts, whereas coastal Bangladesh is a "hotspot" of intermittent floods. (Nicholls et al., 2007). As an attempt to overcome some of the climatic and non-climatic challenges, farm households diversify their livelihood sources (Brown, et al 2006). The climatic conditions in wet regions are harsh, there are high temperatures and high precipitation. These harsh climatic conditions have been exacerbated by climate change and they have caused chronic food insecurity and long-term drop in agricultural production (UNDP, 2009). The prevailing and anticipated weather conditions are therefore a threat to livelihoods and food security in Africa, among other parts of the world. Thus, Zimbabwe is getting more vulnerable to climate changes, and the local climatologists predict that there will be increased poverty and diseases are anticipated due to climate related hazards (Siyamachira cited in the Sunday Mail of 10 April 2011).

## The Effects of Tropical Cyclones on Infrastructure

Climate change has had a negative bearing on aspects of the urban space that include house prices, insurance premiums, residential mobility and urban spatial arrangements. Mills observes that between 1980-2004 global impacts of property is attributed to weather related disasters of climate change with the highest property loss valued over $300 billion (Nolon, 2015). The major attribute to climate change is traced to the greenhouse gases emissions emitted by several-carbon intensive gases. However most African building designers and spatial planners are yet to respond to

potentially damaging effect of climate change on real estate development, through improved building design and layout of cities. Increase in human activities particularly the burning of fossil fuels in recent times keeps increasing the concentration of GHG with a resultant increase in the earth's temperature (Manatsa et al 2013). In south Africa, Kruger (2015) observes that, the economic loss due to the impact of climate change on the costal property was estimated to be more than one billion rand. The South African coastal risk assessment has been done in an attempt to establish the impact of a rise in sea level and the associated hazards on the local economy. In their analysis of floods, they used the replacement value of buildings and the content thereof to estimate the economic cost of a rise in sea level. Giglio et al 2015 explores that market data can highlight the appropriate discount rates for valuing investments in the climate change abatement. The tractable pricing model shows that real estate is exposed to both consumption risk and climate risk. As a result, short-run cash flows are more exposed to climate risk than long run cash flows, allowing us to match the observed housing term structure. Commercial property owners are also face increasing insurance costs as a result of two climate change related phenomena; the increasing frequency and severity of extreme weather events, and rising sea levels.

Cyclone Idai dumped torrents of rain over large parts of Mozambique, Malawi, Zimbabwe, and Madagascar, causing extensive flooding, mudslides, and at least one dam collapse. It also featured strong, sustained, and destructive winds, and caused widespread damage to buildings, infrastructure, and crops. The extent and magnitude of climate related Cyclone Idai which has taken a toll on humanity and its built environment provoke one to assess the correlation between climate related stimuli and property development in Africa. In Chipinge Zimbabwe the USAID (2019) observes that the cyclone severely damaged the district's water supply network leaving more than 30 000 people without regular access to safe water. Cyclone Idai's impact was extensive, covering at least 1,200 square miles; it is among the worst natural disasters to hit the region. As of May 9, the Mozambican government had attributed 45 deaths to Cyclone Kenneth hot on the heels of Cyclone Idai. It also reported that school facilities and public clinics had suffered extensive damage, and that 45,000 homes had been damaged or destroyed. Before hitting Mozambique, Cyclone Kenneth battered the Comoros Islands, a country off the Mozambican coast, where extensive property damage and at least seven deaths were reported. According to UNICEF (2019) cyclone Kenneth destroyed almost 80 percent of farms, more than 60 percent of crops, and nearly 40 percent of cash crops" in the island archipelago. Intense cyclone winds caused extensive damage to private housing and public infrastructure notably hospitals, clinics, schools, and electrical, road, and bridge systems.

**Impacts of Cyclone Idai**

The storm caused high winds and heavy precipitation in Chimanimani and Chipinge districts causing riverine and flash flooding and subsequent deaths, destruction of livelihoods and properties. Based on census data, 48% of those affected were estimated to be children whilst 52% are said to be women. Considerable damage to properties, livelihoods and infrastructure was reported in the districts in the storm's path. (OCHAa, 2019). A respondent highlighted that: *the*

*torrential rainfall swept away many people some of the survivors resorted to climbing trees*. Understanding gender differences can save lives there is considerable evidence that a lack of physical skills, such as the ability to climb trees or to swim, has been a major contributing factor to disaster fatalities among women. In India, up to three times as many women as men died in the 2004 tsunami, while in Indonesia this figure rose to up to four times the number of male casualties (IPCC, 2007). While not all of this disparity is due to differences in physical skills, the gendered nature of impact cannot be under estimated.

Cyclone Idai left a trail of destruction, a respondent from the Civil Protection Unit noted: that:

> The hardest-hit district Chimanimani remained inaccessible two weeks after the storm as heavy rains damaged roads and main access bridges. The trail of destruction was very devastating causing at least 182 deaths and over 300 injured, mainly in Chimanimani, and 330 people were reportedly missing. At least 1623 homes were destroyed in Chimanimani, Mutasa, Mutare, Chipinge, Buhera, Chikomba, Gutu and Bikita districts.

In Chimanimani alone, eight bridges were destroyed. In Buhera, the Marowanyati dam overflowed and many families were displaced. Overally, more than 3,500 households (14,500 to 17,000 people) were estimated to be affected. An estimated 270,000 people were affected by flooding were in need of humanitarian assistance in the seven districts Chipinge, Chimanimani, Buhera, Bikita, Mutare, Gutu, and Chiredzi. The vast majority of people affected were in Chipinge (122,000) and Chimanimani (115,000) districts. (OCHAb, 2019)

**Preparedness**

Strategy 2020 commits the International Federation of the Red Cross (IFRC) to encouraging comprehensive community action to eliminate disaster risks wherever possible, and to reduce the occurrence and impact of disasters when primary prevention is not feasible (IFRC, 200). A respondent at Kopa Business Centre highlighted that:

> People were not able to cope with the intensity of the cyclone they lacked vital information on the nature and severity of the cyclone. This greatly affected women who are mainly in charge of production and reproductive chores.

Following the bursting of the banks of Nyahode River the destruction of major livelihood agriculture left the community in absolute poverty. The ever-changing weather and climate patterns affecting south eastern Africa, such as increasing erratic volumes of rainfall and rising global temperatures, may be associated with human-induced climate change and may increase the intensity and potential impacts of cyclones in the region. Other related effects, such as warming sea surface temperatures and rising sea levels, may also potentially contribute to increases in storm intensity and more severe damage from future cyclones (Matt, 2019). The possibility of future storms strong or stronger than Cyclones Idai and Kenneth and a long history of past intense storms may suggest a potential need for the Zimbabwean government to expand its investments in resilience and disaster preparedness efforts in the near future. This will enable communities and

the country, to mitigate, adapt to, and recover from recurrent natural or man-made shocks and stresses. Resilience programs typically focus on strengthening agricultural and food security systems, health care capacity, local economies, and environmental challenges (USAID, 2018). The destruction caused by Idai shows gaps in Zimbabwe's disaster management strategy. In order to build resilient communities, there is need for gender mainstreaming. Male dominance in disaster decisions and ideological constraints can limit women's access to life saving public shelters, as Ikeda found in Bangladesh's devastating l991 cyclone (Ikeda, 1995, p. 188). For example, in one society women may be expected to focus on the family's domestic needs while men engage in the formal paid workforce, whereas in another, both men and women may be expected to contribute to the family's cash income. Consulting with a socially and economically representative cross-section of affected men and women is essential for effective targeting, as is their participation in decision-making. This is the case even if it is only possible in a limited form in the early days of the emergency. As disasters impact women and men differently because of social, economic, physical and biological differences, having information about their situations is essential when developing responses that better meet their specific needs.

**Mitigation**

Globally climate variability has become a topical issue. In as much as people cannot prevent disasters from occurring their impact can be reduced through gender sensitive planning. A responded from Chimanimani Rural District Council noted that:

> Gender inequality predominantly impacts negatively on women and girls, as men tend to have more decision-making power and control over resources than women. Because of this, efforts to advance gender equality need to focus primarily on improving the situation and status of women and girls in their societies. For example, specific actions may be taken to ensure that women's views and priorities are adequately and directly heard in disaster management committees.

An increase in underage marriages of girls has also occurred elsewhere after natural disasters in which more women than men died (Gomez, 2006). Men on the other hand, sometimes find themselves in the position of having to assume unfamiliar tasks if the women in the household have perished or become severely disabled in a disaster (Wisner et al, 1994). Women frequently lack access to safe obstetric care and birthing arrangements after a disaster. Men, women, boys and girls also face higher risks of sexually transmitted diseases, such as HIV/AIDS. This can be due to an increase in unwanted sex, lack of access to contraceptives, or sexual violence (rape) committed against those living in communal or exposed living conditions, for example, those in shelters, with host families, under tarps, or waiting to rebuild or return to their homes.

**Response**

The Government-led response was coordinated by the Department of Civil Protection (DCP) through the National, Provincial and District Civil Protection Committees, with support from

humanitarian partners. A sub-national flood command centre was set up to facilitate real-time coordination of the response and Civil Protection Committees conducted rapid needs assessments in the affected areas. In Zimbabwe the Civil Protection Unit fall under the Ministry of Local Government Public works and National Housing, however it operationalised with the Zimbabwe National Army and police services. Thus, the military supported search and rescue operations as well as led the evacuation exercise. However, access and logistics were greatly affected by the weather conditions. (CPU, 2019). Response was also from community, and individual household level since initially the area was not accessible.

> A respondent from Chimanimani Urban, Ngangu Township noted that: More than 100 houses were destroyed. Most of the survivors moved to higher ground. Chimanimani hotel provided temporary shelter to a lot of villagers whose houses had collapsed the majority being women and children.

Women are quicker to take cover or prepare to evacuate during an emergency, but often have trouble convincing the men in their life to do so, suggests a University of Colorado Boulder study of how gender influences natural disaster response (Kreimer & Munasinghe, 1990)

The cluster system was activated in Zimbabwe to boost humanitarian response to the humanitarian crisis caused by Cyclone Idai. A participatory approach was done in order to identify the most vulnerable individuals. The research noted that traditional gender roles tend to resurface in the aftermath of disasters, with women being relegated to the role of homemaker while men focus on finances and lead community efforts. The following cluster lead agencies reinforced cluster coordination: Education (UNICEF/ Save the Children); Food Security: Food and Agriculture Organisation (FAO), World Food Programme (WFP); Health World Health Organisation (WHO); Nutrition, United Nations International Children's Emergency Fund (UNICEF); Protection, United Nations High Commissioner for Refugees (UNHCR)/United Nations Fund for Population Activities (UNFPA)/(UNICEF); Shelter/International Organisation for Migration(IOM)/International Federation of Red Cross (IFRC); WASH (UNICEF); Logistics WFP. Inter-clusters coordination meetings were held every Wednesday in Harare, the same was replicated at Mutare level every Friday, while in Chipinge the partners meetings took place on daily. An information management working group was been established to support data analysis and information sharing. (OCHAc, 2019)

Mass flood awareness campaigns were done by various media platforms and SMS the United Nations Office for the Coordination of Humanitarian Affairs was active in the awareness campaign. Other humanitarian partners provided non-food and food items in all affected provinces. Relief aid including temporary shelters, water and sanitation (WASH) items, Child Protection-related supplies, mama kits and food humpers. There is an ongoing health and nutrition intervention programme in Chimanimani district supported by the Health Development Fund (HDF). Following the destruction of livelihoods WFP actived vulnerable group feeding scheme. (OCHAa 2019). Issues of social exclusion were highlighted by a respondent who argued that:

> The whole process of distribution of aid was highly politicized. Moreover, there have been many instances of women missing out on relief assistance, particularly since the government through the District Administrator registered households based on their male heads.

Another complexity was that of ascertaining the credibility of those renting and squatters, thus making the process prone to the inclusion of outsiders. This concurs with a study, in Thailand following the Indian Ocean Tsunami, where female household members who become the main breadwinners due to the illness or injury of the male head of the household had difficulties getting recognition by authorities (Asia Pacific Forum on Women, Law and Development, 2006).

The trail of destruction did not spare public institutions; notable was destruction of Charles Luwanga High School. A boarding hostel was destroyed killing 2 pupils. Rehabilitation programmes for affected schools were instituted in all affected districts. In Chimanimani and Chipinge districts 40,000 textbooks were distributed to affected schools. Temporary Learning Spaces were established in the worst affected schools. Temporary latrines were constructed at 80%t of all affected schools in Chimanimani and Chipinge. World Bank announced its intention to provide up to $75M for the cyclone-response with emphasis on early recovery. With all the effort by various stakeholders to help communities. People still remain displaced, most of them stay in host communities, while some are still residing in collective centres and camps. The informal camp settlement in Kopa is a continuing concern (OCHAd, 2019**).**

**Recovery**

Central to post disaster recovery is the concept of urban resilience. Urban resilience in cities has been used in a number of different contexts ranging from climate change to sustainability and to the role of resilience in reducing the vulnerability of urban areas from natural disasters (Lewis and Mioch, 2005; Chirisa *et al*. 2015). The concept originates from the need to develop cities that have the ability to withstand various shocks. This is so because, by their nature cities are complex systems in which a number of processes unfold and these at times may have negative impacts on the functioning of the cities. A respondent from Civil Protection Unit noted that:

> The roles women play in contributing to a household's food security or income, whether as family members or heads of the household, need to be understood, and livelihood recovery activities should be designed that meet their needs, in addition to those of the men in the household.

One of the most important areas of post-disaster recovery programming for both men and women is the restoration of economic opportunities or the development of new livelihood opportunities to replace those that were lost. This can include diversifying household income sources to strengthen resilience to future hazards. These strategies are effective and efficient in reducing households' vulnerability to food insecurity (Chitongo, 2019).

Discussions around post emergency reconstruction of Cyclone Idai in Zimbabwe has started. The World Bank has activated the International Development Association (IDA) Crisis Response

Window (CRW) to provide up to $545 million in total for the three affected countries of which $350 million will be provided to Mozambique, $120 million to Malawi and $75 million to Zimbabwe. The European Union and European Investment Bank pledged €200 million to Mozambique. In Zimbabwe, the Bank participated and continues to play a role, in the UNOCHA convened early recovery program for the Post Cyclone Idai devastation. (African Development Bank Group, 2019). However, for the sustainability of all these post disaster recovery initiatives there is need for community participation.

**Coping strategies**

As a result of the Cyclone, some of the members of the community, have had their livelihood strategies compromised. As a livelihood diversification strategy community have started to engage in various coping strategies that include selling fire wood, brewing and selling beer, and gardening. However, since livelihood options are still limited the role of the state has to take centre stage, with assistance from other non-state actors (CARE, 2019). Most water points and systems were destroyed by the cyclone and people are accessing water from rivers and unsafe sources, putting them at risk of cholera and typhoid (UNOCHA, 2019)

**Conclusions and policy recommendations**

Chief among the numerous findings of this study was not only that post-displacement scenarios are reminiscent of post-conflict contexts in terms of gendering human security, but, that any effort to emancipate women should pragmatically embrace gender as an essential variable as compared to the previous Human Security notion which romanticises it much to the throttling of women's security. It is vital that women and men from all social and economic groupings in disaster affected communities actively participate in the design and location of new housing and communal infrastructure, such as water and sanitation facilities, as well as the repair of existing structures. If gender mainstreaming is not incorporated in planning and disaster management this will lead to unsafe living conditions, because of a lack of understanding of the livelihoods and social needs of the inhabitants. More so resilient communities can only be achieved through local participation this ensures sensitivity to culture, indigenous knowledge systems and human needs. Therefore, the researcher recommends advocacy between all stakeholders in disaster management. So as to come up with a gender inclusive needs assessment for victims of Cyclone Idai in Chimanimani. This will strengthen gender perspectives of risks and vulnerability. The analysis should include diverse groups such as the poor, elderly, disabled and other vulnerable groups. More so disaster risk reduction and preparedness should start from a community level. This will enable all socio-economic and cultural factors to be considered. In order to achieve climate resilient communities' government and local authorities should periodically review local and national disaster management plans.

**References**

African Development Bank Group (2019). Programme Post Cyclone Idai and Kenneth Emergency Recovery and Resilience Programme for Mozambique, Malawi and Zimbabwe (PCIREP), May 2019 Report

Arma¸s, I. (2008). *Social vulnerability and seismic risk perception. Case study: The historic center of the Bucharest Municipality/Romania.* Nat. Hazards, 47, 397–410.

Bankoff, G. *The Tale of the Three Pigs: Taking Another Look at Vulnerability in the Light of the Indian Ocean Tsunami and Hurricane Katrina*. Available online: http://understandingkatrina.ssrc.org/Bankoff/(accessed on 16 September 2018).

Barberi, F.; Davis, M.S.; Isaia, R.; Nave, R. & Ricci, T. (2008). *Volcanic risk perception in the Vesuvius population.* J. Volcanol. Geotherm. Res, 172, 244–258.

Bova, Elva, Marta Ruiz-Arranz, Frederik Toscani, & H. Elif Ture, (2016). *The Fiscal Costs of Contingent Liabilities: A New Dataset*, IMF Working Paper WP/16/14.

Brown, R., Stephens, C., Ouma, J., Murithi, M., & Barrett, C. (2006). Livelihood strategies in the rural Kenyan highlands. *African Journal of Agriculture Resource Economics*, 1(1), 21–19.

CARE (2019). *Rapid Gender Analysis Tropical Cyclone IDAI Zimbabwe report* April 2019

Cavallo, Eduardo and Ilan. (2010). *The Economics of Natural Disasters:* A Survey, IDB Working Paper Series No. IDB-WP-124, May.

Centre for Research on the Epidemiology of Disasters (CRED) (2015). The Human Cost of Natural Disasters.

Chirisa, I., Bandauko, E., Mazhindu, E., Kwangwana, N.A. & Chikowore, G. (2016). Building resilient infrastructure in the face of climate change in African cities: Scope potentiality and challenges. *Development Southern Africa*, 33(1): 113-127

Chitongo, L. (2019). Rural livelihood resilience strategies in the face of harsh climatic conditions. The case of ward 11 Gwanda, South, Zimbabwe, Cogent Social Sciences, 5:1, DOI: 10.1080/23311886.2019.1617090

Climate Change (2013). The Physical Science Basis, Working Group I Contribution to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change

CRS (2019). *Cyclones Idai and Kenneth in Southeastern Africa: Humanitarian and Recovery Response in Brief. https://crsreports.congress.gov* , 10-23.

Dankelman, I. (2010). *Gender and Climate Change. An Introduction*. London: Earthscan.

Desmond Manatsa, Yushi Morioka, Swadhin K. Behera & Toshi Yamagata. (2013). Link between Antarctic ozone depletion and summer warming over southern Africa. *nature geosciences*, 34-42.

Enarson, E., A. Fothergill, & L. Peek. (2007). Gender and disaster: Foundations and directions. In *Handbook of disaster research*, 130–146. New York, NY: Springer.

Fothergill, Alice. (1996). "The Neglect of Gender in Disaster Work: An Overview of the Literature", in *International Journal of Mass Emergencies and Disasters*, 14.

Fuller, Helene. (1994). "Development of Women's Policies for Emergencies and Disasters", in Australian Journal of Disaster Management, 9 (2): 24-27.

Giglio, S, M Maggiori, J Stroebel & A Weber (2015). "Climate change and long-run discount rates: Evidence from real estate", NBER Working Paper 21767.

Gomez, S. (2006). Guidelines for Gender Sensitive Disaster Management: Practical Steps to Ensure Women's Needs Are Met and Women's Human Rights Are Respected and Protected during Disasters; Chiang, M., Ed.; Asia Pacific Forum on Women Law and Development (APWLD): Chiang Mai, Thailand.

Greenberg, M.R.& Schneider, D.F. (1995) *Gender differences in risk perception: Effects differ in stressed vs. nonstressed environments*. Risk Anal. 1995, 15, 503–511.

Gutteling, J.M.& Wiegman, O. (1993). *Gender-specific reactions to environmental hazards in The Netherlands. Sex Roles*, 28, 433–447.

IFRC. (2009). The "Strategy 2020" International Federation of Red Cross and Red Crescent Societies, Geneva, Newsletter No. 21 December 2009.

Ikeda, Keiko. (1995). "Gender Differences in Human Loss and Vulnerability in Natural Disasters: A Case Study from Bangladesh", in Indian Journal of Gender Studies 2 (2): 171-193

IPCC. (2007). Climate Change 2007: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change. Summary for policy makers. Cambridge: Cambridge University Press.

IPCC. (2007). Summary for policymakers. In M. L. Parry, O. F. Canziani, J. P. Palutikof, P. J. van der Linden, & C. E. Hanson (Eds.), Climate change 2007: Impacts, adaptation and vulnerability. Contribution of working group II to the fourth assessment report of the intergovernmental panel on climate change (Vols. 7–22). Cambridge, UK: Cambridge University Press.

IPCC. (2012). Managing the risks of extreme events and disasters to advance climate change adaptation. In C. B. Field, V. Barros, T. F. Stocker, D. Qin, D. J. Dokken, K. L. Ebi, P. M. Midgley (Eds.), A special report of working groups I and II of the intergovernmental panel on climate change. Cambridge, UK, and New York, USA: Cambridge University Press.

Kellet, J., & D. Sparks. (2012). *Disaster Risk Reduction: Spending Where it Should Count.* Wells, Somerset: Global Humanitarian Assistance.

Kreimer A, & Munasinghe M. (1990) Managing Natural Disasters and the Environment Selected Materials from the Colloquium on the Environment and Natural Disaster Management Published by the Environmental Policy and Research Division Environment Department, World Bank, Washington, D.C.

Kruger, A. (2015). The influence of climate change on the Market Value of Coastal Residential Property in South Africa. *Department of Finance and Investment Management,University of Johhanesburg,South Africa.* , 20-30.

Lewis, D., and and J. Mioch. (2005) Urban Vulnerability and Good Governance. *Journal of Contingencies and Crisis Management* 13(2), 50-55.

Matt McGrath (2019). "Cyclone Idai: What's the Role of Climate Change?" BBC News, March 20, 2019

Nakhaei, M., H.R. Khankeh, G.R. Masoumi, M.A. Hosseini, Z. Parsa-Yekta, L. Kurland, & M. Castren. (2015). Impact of disaster on women in Iran and implication for emergency nurses volunteering to provide urgent humanitarian aid relief: A qualitative study. *Australasian Emergency Nursing Journal* 18 (3): 165–172.

Nicholls, R. J., Wong, P. P., Burkett, V. R., Codignotto, J. O., Hay, J. E., McLean, R. F., & Woodroffe, C. D. (2007). Coastal systems and low-lying areas. climate change 2007: Impacts, adaptation and vulnerability. In M. L. Parry, O. F. Canziani, J. P. Palutikof, P. J. van der Linden, & C. E. Hanson (Eds.), Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change (pp. 315–356). Cambridge, UK: Cambridge University Press.

Nolon, J. R. (2015). Land Use and Climate Change Bubbles: Resilience,Retreat, and Due Diligence. *Elisabeth Haub School of Law at Pace University, jnolon@law.pace.edu* 66-87.

Obcarskaite, E. (2014). Women in Civil Protection: Gender Equality and Gender Mainstreaming Towards Prosperity in the Baltic Sea Region. In Handbook on: Gender in Civil Protection; Obcarskaite, E., Olsson, A.J., Eds.; KOPA Publishing: Karm˙elavos sen, Lithuania; ISBN 978-91-981257-8-8.

OCHA (2019a) Zimbabwe: Floods Flash Update No. 1. 17 March 2019

OCHA (2019b) Zimbabwe: Floods Situation report No. 1. 27 March 2019

OCHA (2019c) Zimbabwe: Cyclone and floods Situation report No. 4. 24 April 2019

OCHA (2019d) Zimbabwe: Emergency Situation report No. 7. 14 May 2019

Riechard, D.E. & Peterson, S.J. (1998). Perception of Environmental Risk Related to Gender, Community Socioeconomic Setting, Age, and Locus of Control. J. Environ. Educ, 30, 11–19.

SADC. (2009). Regional Humanitarian Floods Appeal in Response to Tropical Cyclone IDAI 11 April 2019 report

Sawada Y. and Takasaki Y. (2017) Natural disaster, poverty, and development: An introduction. *World Development*, 94:2–15.

Siamachira, J. (2011). Regional food security under threat. Cited in the Sunday Mail Of, 10(April), 2011.

Stern, Nicholas, (2007). The Economics of Climate Change: The Stern Review, Cambridge and New York: Cambridge University Press.

The Intergovernmental Panel on Climate Change (IPCC). (2014). Climate Change 2014: Synthesis Report. Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Core Writing Team, R.K. Pachauri and L.A. Meyer (eds.)]. IPCC, Geneva, Switzerland.

UNDP. (2009). Climate change in the African drylands: Options and opportunities for adaptation and mitigation. Nairobi: Author.

UNICEF. (2019). World Bank, "Statement on High-Level Meeting on Humanitarian and Recovery Efforts Following Cyclone Idai," April 11, 2019.

United Nations Office for Disaster Risk Reduction (UNISDR). http://www.unisdr.org

UNOCHA, February 2019, FLASH appeal, January – June 2019

USAID, Fact Sheet #7, April 12, 2019, op cit. and prior USAID Cyclone Idai fact sheets cited above. (n.d.).

USAID. (2018). *Resilience Evidence Forum Report*.

Wisner, B.; Blaikie, P.; Cannon, T. & Davis, I. (1994). At Risk: Natural Hazards, People's Vulnerability and Disasters; Routledge: London, UK, p. 134. ISBN 978-0-203-44423-8.

Yadav, P. (2016). White sari—Transforming widowhood in Nepal. *Gender Technology and Development* 20 (1): 1–24.

ZIMSTAT. (2012). Poverty and Poverty Datum Line Analysis in Zimbabwe 2011/12. Harare: ZIMSTAT.