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# **Preventing and Resolving Future Climate and Natural Resource-related Conflicts in the Zambezi Basin: A Study of Bulawayo and Chinde Districts**

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## ABSTRACT

Long-term changes in climate are likely to increase a range of risks to human security, including the risk of violent conflict. The city of Bulawayo in Zimbabwe, and Chinde district in the Zambezia province of Mozambique have been identified as areas that are highly susceptible to future climate-induced conflicts. Although it is unlikely that climate change alone will be a direct cause of conflict, research points to the fact that it is a conflict threat multiplier that will intersect with countless other factors, including the quality of political governance, which could make the difference between adaptation or confrontation. Empirical work on the causal relationship between climate change and conflict in different settings has yet to produce consensus. However, climate change can be linked to conflict in various ways, including increased competition over reduced and uncertain water supply; increased competition over agricultural land in the face of reduced crop yields, desertification and rising food prices; large-scale migration as a result of sea-level rise, weather changes and loss of land productivity; and diminished capacity of governments to provide services to their people in the face of increasing poverty. The paper reports the findings of a study investigating the dynamic relationship between climate change, natural resource management and the likelihood of violent conflict in Bulawayo, which sits on a watershed between the Zambezi and Limpopo drainage basins, and Chinde district in the Zambezi delta. The paper also discusses entry points for strengthening local capacity for conflict management in Bulawayo and Chinde. It ends by outlining a research agenda towards improved understanding of the climate change, natural resource management and conflict nexus in the Zambezi basin.

## ABOUT THE AUTHOR

Tigere Chagutah currently works as Pan Africa Campaigner at Oxfam International. Prior to joining Oxfam he managed the Climate Governance in Africa Programme at the Heinrich Böll Foundation. Tigere has wide-ranging experience in research, policy analysis and advocacy at the nexus of development, climate change adaptation and disaster risk reduction. His fields of interest also include the role of participatory communication in development, and public participation in local-level governance of sustainable development. Tigere is a PhD candidate at the North-West University, South Africa, where his research focuses on participatory communication interventions for disaster risk reduction within at-risk communities in South Africa.<sup>1</sup>

## ABBREVIATIONS AND ACRONYMS

BA	Bulawayo Agenda
BPRA	Bulawayo Progressive Residents Association
Frelimo	Mozambique Liberation Front (Frente de Libertação de Moçambique)
LAC	Local Adaptive Capacity
NGO	non-governmental organisation
Renamo	Mozambican National Resistance (Resistência Nacional Moçambicana)
WOZA	Women of Zimbabwe Arise
ZANU–PF	Zimbabwe African National Union–Patriotic Front

## INTRODUCTION

The issue of climate change is currently at the forefront of the international policy agenda, with nations of the world deep in dialogue on how best to respond to present and predicted impacts of a rapidly warming world. Among others, the security implications of climate change are attracting increasing attention. Although science has largely put to rest arguments challenging the climate change thesis, the various ways in which rising temperatures will affect the world in coming decades and how humankind ought to respond all remain unclear.<sup>2</sup> However, ongoing research and emerging evidence shows that the projected impacts of long-term changes in climate, some of which have already occurred, are likely to increase a range of risks to human security, including the risk of violent conflict.<sup>3</sup> Climate change impacts likely to cause conflict in the Zambezi basin include food and water insecurity, decreased productivity of agricultural land, population shifts and economic losses.

The Zambezi river basin drains a land area of almost 1.4 million km<sup>2</sup>, stretching across eight countries in Southern Africa. With an estimated population of 40 million people, the basin covers almost all the territory of Malawi and a large part of Zambia. It covers almost half of Zimbabwe, significant areas in both Mozambique and Angola, and small parts of Tanzania, Botswana and Namibia.<sup>4</sup> Climate change is predicted to have widespread, though differentiated, impacts across the basin. Already, there is compelling evidence of a shift towards a new climate state characterised by higher temperatures, extremes of rainfall in some parts of the basin, and shifts in the onset and duration of the rainy season. As with the rest of Southern Africa, the general climate trend is expected to be that of dryness, with rains expected to decrease by as much as 40% in the region as a whole.<sup>5</sup> The region is expected to experience increased incidences of floods and more intense droughts as a result of warming temperatures. Cyclonic activity is also expected to become more intense, with larger peak wind speeds and heavier rains.<sup>6</sup> The general drying and increased frequency of extreme hydrological events will, as has already been noticed in some cases, intersect with specific vulnerabilities at local and social group levels, causing further erosion of livelihood options. Damage and loss of resources due to climate change will affect the ability of local communities to meet their basic needs, such as food security and access to healthy environments and ecosystems, and increase the likelihood of competition within and between communities for scarce resources.<sup>7</sup>

Climate change can be linked to conflict in various ways. These include increased competition over reduced and uncertain water supply; increased competition over agricultural land in the face of reduced crop yields, desertification and rising food prices; large-scale migration as a result of rising sea level and weather changes; and diminished capacity of governments to provide services to their people in the face of increasing poverty.<sup>8</sup> However, although empirical work on the causal relationship between climate change and conflict has yet to produce consensus,<sup>9</sup> arguments pointing to climate change being a conflict threat multiplier have gained traction.<sup>10</sup> Existing literature supports the argument that although climate change may not generate conflict in itself, it can, and in some instances already does, act as a 'threat multiplier' by interacting with other complex societal dynamics and politics towards causing conflicts. This is particularly so in places where local people's livelihoods are dependent on a declining natural-resource base as a result of climate change.<sup>11</sup> Positive correlations have been established between

climate-related reductions in the availability of water resources and an increased likelihood of conflict.<sup>12</sup> Climate change has a direct effect on the ability of a territory to support a population and, as production goes into a climate-induced decline, the propensity for violence increases.<sup>13</sup> The risk of conflict is further accentuated in societies where there are few socio-economic safety nets in place.<sup>14</sup>

A key challenge today, therefore, is to better understand the relationship between climate change, natural-resource management and conflict, and how associated risks could be better managed through appropriate conflict prevention and resolution mechanisms.<sup>15</sup>

The paper is divided into three parts. The first part maps the relationships between climate change, natural-resource management and conflict. It discusses vulnerability to climate change in the Zambezi basin. It then explores the concept of adaptive capacity and resilience in relation to climate change. The second part of the paper reports the findings of a case study carried out in Bulawayo and Chinde district to investigate their vulnerability to climate change; quality of governance or politics; adaptive capacity and resilience; and likelihood of violent conflict.<sup>16</sup> It also discusses opportunities and entry points for strengthening local capacity for conflict prevention and resolution in these two potential conflict flashpoints. The final part of the paper outlines a research agenda towards an improved understanding of the climate change, natural resource management and conflict nexus in the Zambezi basin.

## MAPPING THE LINKAGES: CLIMATE CHANGE, NATURAL-RESOURCE MANAGEMENT AND CONFLICT

### Climate change

An eclectic body of work has accumulated on the relationship between climate change, management of natural resources and conflict. Work representative of the myriad different relationships discussed in the literature is that of Barnett and Adger,<sup>17</sup> Hendrix and Salehyan,<sup>18</sup> and Swain *et al.*,<sup>19</sup> who have hypothesised a battery of mechanisms by which violent conflict may arise from the interaction of climate change with ecological and social systems.

A useful distinction made to delimit the scope of the discussion in the paper is the scale at which conflict might occur. Although conflict may occur at interstate as well as intrastate scales in the form of organised, armed insurgencies, this paper concerns itself only with social and political disturbances as experienced at localised community level. In eschewing the state-centric, armed conflict paradigm, the analysis presented here lends itself to the realm of *human security*. Thus, the analysis focuses on the impact of climate change on the capacity of individuals and communities to manage stresses to their livelihoods needs, rights and values;<sup>20</sup> and seeks to determine how those affected may be shielded from critical and pervasive threats and be empowered to take charge of their lives.<sup>21</sup> That said, it is essential to keep in mind that although the focus of human security is the individual, it remains a function of multiple processes that are often exogenous to the locality of communities where individuals reside. These processes often operate at

different spatial and temporal scales, some of which may well extend beyond the local to the national, or may be related to extended historical cycles.<sup>22</sup>

Investigations into whether climate-related deviations in rainfall patterns in Africa affect the propensity for individuals and groups to engage in disruptive activities – such as demonstrations, riots, strikes, communal conflict, and anti-government violence – demonstrate a robust positive relationship between environmental shocks and unrest.<sup>23</sup> The findings illustrate that water shocks may lead to social conflict via their effects on resource competition, poor macroeconomic outcomes, and reduced state capacity.<sup>24</sup> There are at least five mechanisms through which climate-related rainfall deviations may lead to socio-political conflict.<sup>25</sup>

- As water availability is curtailed by uncertain rainfall patterns, various water users – which may include farmers, herders, manufacturers, and other industrial users and domestic consumers of water – may come into conflict over water rights and access. Also, encroachment of deserts into formerly productive land caused by rainfall shortages can lead to competition over cropland and pastures.
- Damage to cropland as a result of rainfall extremes, in the form of floods or drought, can lead to temporary food shortages and price hikes, causing price disputes between rural producers and urban consumers.
- As livelihoods come under stress, particularly in rural areas where the majority depend on rain-fed agriculture, some people may decide to migrate to urban areas where there is a wider range of livelihood options. Migration, both within countries and across national borders, can lead to intensified competition over jobs, housing, and other basic services. Burgeoning urban populations also strain local government's capacity to supply adequate sanitation, electricity and infrastructure; thereby creating friction between the new arrivals and host urban communities.
- Economies in most African countries are based on climate-sensitive sectors, such as agriculture, nature tourism and forestry. Natural disasters therefore pose a danger to state revenue through reduction of the tax base as well as increased demands for services and assistance by hard-hit communities. When added to common planning failures, reduction in public finance through climate impacts can increase the risk of resource competition, clientelism, patronage and rent seeking, the impacts of which often have a disproportionate impact on the most vulnerable.
- Rainfall variability can exact an enormous human and financial toll on developing economies through displacement, loss, crop failure, and associated water scarcity or overabundance; all of which, if not managed by the state, can easily deteriorate into general economic malaise, civil conflict and social disorder.

An examination of rainfall deviations and records of various types of conflict from 47 African countries between 1990 and 2008 finds that rainfall deviations, both excess and shortages, have a significant effect on both large-scale and small-scale instances of social and political conflict.<sup>26</sup>

Climate change may undermine human security by reducing access to, and the quality of, natural resources that are important to sustain livelihoods. The kinds of human insecurity that climate change may affect can in turn increase the risk of violent conflict. Climate change may undermine the capacity of states to act in ways that promote

human security and peace. In sum, through direct effects on livelihoods and indirect effects on state functions, climate change may in certain circumstances increase the risk of violent conflict.<sup>27</sup> Four main mechanisms can be used as a lens for examining the fluid relationship among climate change impacts, management of natural resources and the likelihood of violent conflict. These are vulnerable livelihoods, poverty (relative/chronic/transitory), weak states, and migration.<sup>28</sup> The following processes may be expected to lead to deprivation, heightened tensions and, eventually, to conflict.

*Livelihoods:* Climate change is likely to cause the contraction of livelihoods in populations that are highly dependent on natural resources owing to widespread impacts on water availability, agricultural productivity and extreme weather events.

*Poverty:* Poverty (particularly relative poverty) is expected to be affected by spatial differentiation of climate impacts and the sensitivity of different regions' economies to climate variation and long-term change. Climate change may directly increase absolute, relative and transient poverty by undermining access to natural capital. Climate change may also indirectly increase poverty through its impact on national resource sectors and the ability of governments to provide social safety nets.

*Weak states:* States weakened by a variety of internal or external causes and reeling from revenue losses owing to poor performance of climate-sensitive economies may be unable to respond to climate-related increases in the cost of providing public infrastructure, such as water resources, and services, such as education, and securing food security. Democratic deficits often found in weak states may also militate against equitable and efficient distribution of climate-constrained resources.

*Migration:* Although migration may be a plausible response by people whose livelihoods are undermined by climate change, changes in climate are unlikely to be the sole reason why individuals decide to move. However, where large-scale movements of people occur there may be risk of conflict over access to finite or dwindling resources and services in receiving communities.

Another hypothesis to those presented above argues that the most important interactions may be clustered into four conflict constellations in which water stress, food insecurity, natural disasters and migration are the factors that determine a social system's pathway towards conflict.<sup>29</sup>

### **Natural-resource management**

Swain *et al.*<sup>30</sup> draw a correlation between weakened adaptive capacities, socio-political problems and problems with the governance of natural resources among communities. They argue that it is unlikely that the socio-economic impact of climate change will cause conflict on its own. Rather, weak and partisan political structures adversely affect the governance of natural resources, and, hence, are linked to a weakened capacity to adapt to the negative effects of climate change. Climate change amplifies competition for resources

and imposes stresses on the socio-political fabric, raising tensions and the threat of conflict in societies that are already facing social, political and economic pressures.

Politics, or the quality of governance, particularly the role of elites, institutional capacity and social identities, are most crucial and can make the difference between community adaptation or conflict in response to climate change stresses. The core of this argument is that societies become highly vulnerable to climate-induced conflicts when they suffer from poor central leadership, weak institutions and polarised social identities.<sup>31</sup>

Elites, institutions and social identities in resource governance under conditions of climate stress all play a significant part in determining the likelihood of conflict.<sup>32</sup> When climate change and variability bring about resource stress, bad leaders may come into conflict with the community by seeking to control access to the available resources. Malign elites may also seek to exploit anxiety among the community over dwindling resources to organise and mobilise against other elites, using the community as fodder for their battles. Elites can use access to food and water as a political tool by channelling scarce resources to their own followers and withholding them from their adversaries, thus fuelling conflict. Conversely, societies that exhibit some form of social contract between the rulers and the ruled will cope better than those in which authorities exhibit undemocratic excesses.<sup>33</sup>

## **Conflict**

There are two main ways in which weak institutions interact with climate change and variability to reinforce the risk of violent conflict. First, where climate change leads to water and food shortages weak institutions with low administrative capacity and insufficient infrastructure will be unable to distribute food, water and health supplies to exposed areas. In addition to the further undermining of the state in such instances, communities will be left frustrated and in competition over the meagre resources to which they have access.<sup>34</sup> Second, frail institutions are also less likely to have the capacity to regulate and control climate-induced tensions in a peaceful manner. If state structures are deemed to be weak and partial, elites and local communities engaged in resource disputes with other communities may take matters into their own hands rather than let the state be an arbiter.<sup>35</sup>

Most forms of collective violence are dependent on a common social identity that binds people together. Aggrieved individuals often need to feel that they are facing a common problem with others of a common ethnicity, religion, class, ideology, or region before they decide to work together to overcome the problem.<sup>36</sup> Inequalities among culturally defined groups (ie 'horizontal inequalities') can raise the risk of conflict significantly.<sup>37</sup> In addition, when cultural differences coincide with economic and political differences between groups, this can reinforce the feelings of marginalisation and cause deep resentment that may lead to violent struggles. Inequalities tend to be interdependent and mutually reinforcing, leading to a high probability of conflict in societies where different horizontal inequalities co-exist. For instance, a significant rise has been established in the probability of conflict in countries with co-existing severe economic and social horizontal inequalities.<sup>38</sup> Any type of horizontal inequality can provide an incentive for group political mobilisation, but political inequalities (that is, political exclusion of particular groups) are most likely to motivate group leaders to instigate conflict.<sup>39</sup> Malign elites thus tap into the shared feelings of injustice among the aggrieved – often heightened in the face

of perceived threats to livelihood resources, as would be occasioned by climate change – to mobilise them to use violence.

## VULNERABILITY TO CLIMATE CHANGE IN THE ZAMBEZI BASIN

The degree to which societies in the Zambezi basin will experience the negative environmental and socio-economic effects of climate change depends in large part on their vulnerability to it. This vulnerability can be measured by looking at the extent to which societies are dependent on natural resources and ecosystem services; the extent to which the resources and services that societies rely on are sensitive to changes in climate; and the capacity of societies to adapt to changes in these resources and services (adaptive capacity).<sup>40</sup> Added to these determinants is the *exposure* of communities to hazards brought on by climate change.<sup>41</sup> It is important to note that vulnerability levels are not the same for all people in the basin, and will vary within and between communities according to differential access to services and livelihood options.<sup>42</sup>

It has been established that the Zambezi basin can expect to experience increased temperatures, and more frequent and intense extreme weather events. The livelihoods of communities (and national economies) in the region are linked intimately to climate-sensitive assets. Four in five people in Malawi, for instance, depend on predominantly rain-fed agriculture for income.<sup>43</sup> Continuing dependence on natural resources and ecosystem services, and increased exposure and sensitivity of resources such as fresh water, soils, reefs and fisheries to climate change, will reinforce vulnerability in the Zambezi basin. Thus the related concepts of *adaptive capacity* and *resilience* (both defined in detail below) have gained importance in an effort to better understand how vulnerable communities might cope with the impacts of climate change and better manage the associated risk of conflict. It has been established that the adoption of more robust local and institutional coping mechanisms in countries that have frequently suffered climate-induced natural disasters results in as low a risk of conflict as observed in countries that rarely experience natural disasters.<sup>44</sup>

## ADAPTIVE CAPACITY AND RESILIENCE

The Intergovernmental Panel on Climate Change has defined adaptive capacity as ‘the combination of the strengths, attributes, and resources available to an individual, community, society, or organisation that can be used to prepare for and undertake actions to reduce adverse impacts, moderate harm, or exploit beneficial opportunities’.<sup>45</sup> Given the human-security orientation adopted in this paper, the Local Adaptive Capacity (LAC) framework<sup>46</sup> provides perhaps the most appropriate parameters for discussing the concept of adaptive capacity as it relates here. Within this framework communities are considered to have high adaptive capacity when they are able to anticipate, deal with, and respond to changing climate and development pressures, while maintaining (or even improving) their well-being.<sup>47</sup> Unlike most assessments to date, which have focused only on assets and capital that people have or need to adapt as indicators of adaptive capacity at the community level, this approach also emphasises the role of *processes* and

*functions*. Understanding adaptive capacity involves understanding processes like decision making and governance; the fostering of innovation; experimentation and opportunity exploitation; and the structure of institutions and entitlements.<sup>48</sup> Understanding adaptive capacity at community level therefore encompasses paying attention not only to what a system *has*, but what a system *does* in order to allow it to adapt.<sup>49</sup> Thus, from the a priori understanding that adaptive capacity and situations of climate-induced conflict tend to reinforce each other negatively,<sup>50</sup> any efforts to forestall conflict arising from the impacts of climate change in communities will require an understanding of the assets and capital as well as processes and functions through which communities can enhance their adaptive capacity.

The definition of resilience as a concept currently remains ambiguous.<sup>51</sup> However, a reading of socio-ecological literature on resilience reveals its obvious applications for adaptation and conflict management. Two definitions of resilience are especially comprehensive when applying the concept to social systems. The first is ‘the ability to face internal or external crisis and not only effectively resolve it but also learn from it, be strengthened by it and emerge transformed by it, both individually and as a group’.<sup>52</sup> The second definition is the capacity of an eco-system to ‘absorb disturbances while maintaining its behavioral processes and structure. [Resilience] can be defined as the capacity to buffer perturbations, to self-organise, and to learn and adapt’.<sup>53</sup>

The concept of resilience thus includes four main components with clear applications for community management of climate-related natural-resource conflict: social response, self-organisation, learning, and adaptation. The *social response* to hazards (natural or man-made) will differ across regions and cultures, as communities differ with respect to their reliance on themselves as opposed to expecting external assistance in the aftermath of a hazardous event.<sup>54</sup> More resilient communities mobilise their own resources quickly and effectively, irrespective of assistance from other sources. Conflict is more likely to occur in those communities that do not have the resources (material and social) to mobilise and instead passively wait for assistance following hazardous events. *Self-organisation* refers to the activities such as emergency response and recovery, fostering collaboration among civic organisations and neighbourhoods, and maintaining social order that a community engages in to restore essential functions at least to the pre-event level. *Learning* requires the availability of space, time and the tools necessary for the community to come together and discuss ‘lessons learned’ after negative (and positive) events have taken place. Violent conflict may leave communities forever changed, either through loss of life or loss of social-cultural landmarks and reference points. In these circumstances, it is important for a community to adapt. The process of *adaptation* ensures that people are dealing with the situation at hand, rather than romanticising about an idealised past or harbouring anger and resentment at perceived (or real) failures of local or national authorities.

Implicit in the definitions of resilience is the assumption of *redundancy*, ie that there is more than one system of coping – when one system is affected the other systems help with continued functioning.<sup>55</sup> Thus when material and social assets of livelihoods are seriously disrupted by conflict, people may be expected to quickly resume their livelihoods by falling back on the help of the extended family or other social networks. In instances where social ties have been disrupted, through say migration of close family members, redundancy is expected of the central or local government, which is supposed to take care of the citizens and residents when they cannot care for themselves. In the context

of weak states or in the absence of support from government, community and faith-based associations, workplace communities, and neighbourhoods may be sources of the 'back-up' support needed by those whose livelihoods have been disrupted.<sup>56</sup>

If communities are to be resilient to social and economic disruptions occasioned by violent conflict over natural resources, it is important that all these components are developed. Although external intervention may assist in building resilience, its best outcomes are achieved if the process is grass-roots driven and characterised by voluntary participation of community members.<sup>57</sup>

## CASE STUDY: BULAWAYO AND CHINDE DISTRICT

### Setting

Bulawayo is the second-largest city in Zimbabwe and is located about 439 km south-west of the capital, Harare. The city sits on a plain that marks the highveld of Zimbabwe and is close to the watershed between the Zambezi and Limpopo drainage basins. Owing to its relatively high altitude, Bulawayo has a subtropical climate despite lying within the tropics. The mean annual temperature is 19.2° C. It has an annual mean rainfall of 588 mm, with most rain falling during the summer from December to February. The winter (June to August) is usually rainless.<sup>58</sup> Being close to the Kalahari desert, Bulawayo is vulnerable to recurrent droughts and rainfall tends to vary sharply from one year to another.<sup>59</sup> Most of the rivers in the region are perennially dry. Rainfall is unreliable, and the run-off and catchment capacity are poor.

Bulawayo has an estimated total population of one million. Rising population density has increased pressure on most resources and services. The city has the highest mean household size (5.23) and similarly the highest mean dependency ratio (1.40) in the urban centres of Zimbabwe.<sup>60</sup> Bulawayo is reported to have the highest incidence of poverty among urban households in Zimbabwe,<sup>61</sup> with 60% of the city's population living below the poverty line.<sup>62</sup>

Chinde is a district of Zambezia province in the Zambezi river delta, in Mozambique. The district has a total population of 119 898 (of which females constitute 52.4% and males 47.6%), distributed among 28 754 households, with the highest densities found along the coast.<sup>63</sup>

The district experiences an average temperature of 24.8° C, frequent rains and has an average monthly rainfall of 65.3 mm.<sup>64</sup> Chinde is subject to torrential rains from cyclones that can occur in any month from December to March, and cause widespread local flooding. Flooding patterns near the Indian Ocean coast are influenced by oceanic tides. During the rainy season, high tide levels back up the flow of the Zambezi river and spread floodwaters over the coastal plains.<sup>65</sup> The district is characterised by the economic importance of the river delta, which offers vast opportunities for fishing and dry-season cultivation.

### Vulnerability to climate change

The vulnerability of Bulawayo and Chinde to climate change and variability derives from the over-reliance of the two regions' economies and communities on factors that are highly sensitive to climate change. Water stress and scarcity are likely to be the leading climate impacts affecting Bulawayo. In fact, water stress has long been felt in this area. Temperature data from meteorological stations in Beitbridge, Bulawayo and Harare indicate a rise in daily minimum temperatures of around 2.6° C, coupled with a rise in daily maximum temperatures of about 2° C across Zimbabwe in the last century. Associated with this trend has been a decline in rainfall of nearly 5% since 1900; and between 1990 and 2005 there was below-normal rainfall over six seasons.<sup>66</sup>

Bulawayo residents currently experience frequent water cuts and low water pressure.<sup>67</sup> Untreated water sources for Bulawayo are only sufficient for normal rainy seasons, as the volume of water held in underground reservoirs is now too low. Rising population density has progressively increased demand for water to the point where demand has exceeded supply. With the first water restrictions in post-colonial Zimbabwe being imposed in June 1983, Bulawayo has traditionally been beset by chronic water shortages, although this is also attributable to political factors that have delayed investment in new water infrastructure.<sup>68</sup> In fact, there is a belief that chronic water shortages in Bulawayo have as much to do with the geographical location of the city in a semi-arid zone as with a deliberate, political decision by the state not to allocate adequate resources for urban water development to the city.<sup>69</sup> Seemingly, the government of Zimbabwe has been unwilling to help the city of Bulawayo to find long-lasting solutions for sustainable water sources because of the government's long-held perception of the city as a base for opposition politics.<sup>70</sup>

As a result, access to water has long been a source of tension between various water users, and between residents and authorities. A study by the Institute of Water Sanitation and Development<sup>71</sup> warns that existing conflict between different users of water in Bulawayo could escalate if no mechanisms are put in place to prevent or resolve it. For instance, over 100 companies shut down operations between 2010 and 2012; others continue to downsize operations or explore options for relocation in response to the city's water-supply regime, which has left industry without adequate water supplies for their operations.<sup>72</sup> Localised conflicts have also been reported over access to water at a number of boreholes sunk by non-governmental organisations (NGOs) to help ease the water shortages. Conflict has broken out between adjacent communities, as residents collect water at boreholes in neighbouring suburbs when theirs have dried up or broken down.<sup>73</sup> A three-day series of water protests co-ordinated by the Women of Zimbabwe Arise (WOZA) civic movement in November 2012 resulted in running street battles between armed riot police and protesters, with several people reported injured and 79 arrested.<sup>74</sup> A memorandum of demands prepared by WOZA likens the prevailing water woes in Bulawayo to a modern-day Gukurahundi,<sup>75</sup> calling it a government-led campaign to starve Bulawayo of water and eventually de-industrialise the city.<sup>76</sup> In the aftermath of the November 2012 protests, leaders of a coalition of religious groups reiterated allegations of deliberate marginalisation of Bulawayo by the government; and issued warnings of massive violent protests in Bulawayo as people revolt against the water crisis.<sup>77</sup>

Food security is another area in which Bulawayo is highly vulnerable to future climate change and predicted water scarcity. Food insecurity has been a chronic problem in Bulawayo, often triggering protests. Being one of the more arid regions of the country means that local communities already have a limited capacity to absorb and mitigate temporary food shocks. Following the drought of 2002 the Zimbabwe National Vulnerability Assessment Committee<sup>78</sup> reported that Bulawayo and its adjacent Matabeleland North province received 270 733 metric tonnes of cereals, accounting for 27% of national food aid. Food riots, first experienced in the mid 1990s, erupted again in Bulawayo during this period, with 34 people arrested in one instance as police used tear gas to break up a riot at a grain depot.<sup>79</sup> The urban vulnerability assessment report of 2006<sup>80</sup> states that food insecurity was found among 35% of sampled households in Bulawayo; the highest among the major urban centres in the country.

The Chinde district is classified by the UN Framework Convention on Climate Change as one of the locations most vulnerable to climate change in Mozambique, a country which itself ranks third among African countries most exposed to risks from multiple weather-related hazards, mainly floods and droughts.<sup>81</sup> Changes resulting from the interaction of a multitude of factors – such as dam construction upstream of the Zambezi river, changes in political systems and governments, civil war, droughts, displacement, resettlement and population growth – have pushed people to live on the flood plains and to rely heavily on natural resources. People are thus constantly at the risk of flooding and conflict over available resources.

Flooding continues to be the major natural hazard in the district. Over the last decade, the frequency and magnitude of flooding has increased steadily, and is predicted to continue increasing. Chinde, like other areas in the Zambezi delta, is at risk of excess water resulting from increased flood waters in the Zambezi river catchment area, increased rainfall in the district itself due to increased cyclonic activity, and sea-level rise. The interaction of Zambezi floods and sea-level rise is already affecting the delta area, particularly in Chinde, which has villages where the coastline has retreated or advanced as much as 1 m per year in the last 40 years.<sup>82</sup>

Physical exposure to climate hazards is another leading cause of vulnerability in Chinde. Not only does the district's geographic location in a low-lying coastal region make it especially susceptible to climate change impacts, but the less than sturdy nature of a significant number of dwellings in the region leaves many residents at the risk of exposure to torrential rain, flash floods and permanent flooding due to sea-level rise. When floods occur, they cause destruction of food stores, crops, communications infrastructure, roads, bridges, houses, schools and clinics. Floods also render water from unprotected water sources unfit for human consumption and increase the risk of waterborne disease. A 2009 baseline survey report on the southern Zambezia regions indicates that about 52% of households living on the margins of the main rivers regard floods to be the most severe shocks that have led to household food insecurity in their areas.<sup>83</sup>

Population density, of which the Zambezia province has the highest in the whole of Mozambique, is a key source of vulnerability. In the event of an extreme weather event, large numbers of people require supplies and services – including food, water, shelter and medical care – which can overwhelm existing facilities and resources.<sup>84</sup> Additionally, if the effects of climate change force communities from other areas into Chinde, the sudden population shift may put further strain on local infrastructure, environmental systems and

services, and other resources, leading to conflict. Such a scenario is hardly far-fetched, with existing evidence showing that the risk of population shifts due to climate change in Chinde is high.<sup>85</sup> Migrants in resettlement areas in Chinde and surrounding districts have predominantly been driven to migrate to areas within the province because of the sudden onset of climate-related disasters, particularly flooding.<sup>86</sup>

### **Quality of governance**

The political environment is as important as the physical environment in shaping vulnerability to climate change.<sup>87</sup> The societal implications of climate change crucially depend on how human beings, social systems, and political institutions respond.<sup>88</sup> Investigating the political dynamics and interactions with climate change and resource governance in Bulawayo and Chinde reveals many forms of horizontal inequalities<sup>89</sup> (cultural and socio-economic) that point towards a high risk of conflict in a climate-constrained future.

Bulawayo has traditionally been politically restive, with various political parties active in the region. The protagonists in the ongoing political contestation have been opposition political parties, other formations agitating for political and constitutional change, war veterans, labour movements, students and civilians. Contestation has led to several conflicts over perceived political repression and marginalisation by the ruling ZANU–PF (Zimbabwe African National Union–Patriotic Front) government, as well as food and transport price hikes and other economic grievances.

In Chinde, vulnerability to climate change and conflict is worsened by political dynamics. The district suffers from persistent neglect by the government, largely attributed to the fact that Zambezia province has traditionally been considered an opposition politics stronghold. More than 20 years after a peace agreement was signed between the ruling Frelimo (Mozambique Liberation Front) and the former rebel movement Renamo (the Mozambican National Resistance), in 1992, Mozambique does not suffer from any large-scale organised conflict. However, the sporadic occurrence of violent protests and mass demonstrations is an enduring feature of Mozambican society.<sup>90</sup>

### **Elites**

Both Bulawayo and Chinde exhibit a trend of maligned national and local elites, which does not bode well for the future. The prospect of food and water insecurity and other resource scarcity resulting from climate change could be manipulated by such elites in attempts to gain advantage over their rivals. Past experience in Bulawayo has shown that the state, through national elites and a network of local elites, has often used water and access to limited grain as a means of control to rein in what it has traditionally considered to be a politically errant city.<sup>91</sup>

In Chinde the continuing political contestation for the province of Zambezia between Frelimo and Renamo<sup>92</sup> brings with it the risk that any resource shortages occasioned by climate change could exacerbate existing tensions and possibly give rise to violent conflict. This is not without precedent. During the 2000 floods, Renamo accused the Frelimo regime of focusing rescue and relief operations in southern regions, while neglecting Renamo strongholds further north. This is cause for concern, given that, notwithstanding the peace accord, relations have remained frosty between the Frelimo government and

the Renamo-led opposition, with frequent threats by Renamo of returning to war.<sup>93</sup> In October 2012 the leader of Renamo, Afonso Dhlakama, along with 800 of his former guerrillas, returned to his former rebel base from which he had waged a 15-year civil war with Frelimo between 1977 and 1992, raising fears of a fresh outbreak of armed conflict.<sup>94</sup>

### **Institutions**

The presence of weak state institutions that are unable to provide social goods and services to citizens can have a detrimental effect on security.<sup>95</sup> Various factors may contribute to an erosion of state institutions, including external pressures, such as the withdrawal of foreign aid or patronage, price shocks, a contracting tax base, and falling commodity prices, which can undermine the ability of central and local governments to finance the security force, health sector, judicial and educational systems, and to maintain vital infrastructure.<sup>96</sup> Internal dynamics can also affect the quality, effectiveness and reach of state institutions. Periods of political transition and economic mismanagement can lead to institutional disorder and further damage the government's ability to carry out the most basic functions.<sup>97</sup>

Mukamuri, Campbell and Kowero<sup>98</sup> argue that neo-liberal market reforms instituted in Zimbabwe during 1990–2000 eroded the efficiency of state institutions by constraining the availability of financial and other resources to them. As a result, most, if not all, public institutions in the country were severely constrained in their ability to deliver services to the population. Escalated tensions with the international community following the Fast Track Land Reform Programme in the year 2000 resulted in the withdrawal of international balance of payments support and development aid, leading to increased food insecurity, economic instability and a further weakening of already frail state institutions. Bulawayo bore the brunt of the crisis, with several companies downscaling operations while some closed and relocated to the capital city of Harare, leaving Bulawayo with a skeletal private and public institutional presence. As observed in Bulawayo, when the state can no longer provide services such as access to water, food, security, healthcare or educational facilities that mitigate the impacts of climate change, communities are prone to feel aggrieved. This is particularly so where they have been accustomed to the state extending such provisions to them.<sup>99</sup> Unmet grievances often lead to violence. The Social Conflict in Africa Database,<sup>100</sup> for instance, has listed up to 49 distinct events of unrest, including protests, riots, strikes and intercommunal violence in Bulawayo for January 1990 to June 2009.

Low institutional capacity is a long-established feature across Mozambique, which inherited a dysfunctional economy with little in the way of a developed infrastructural base at independence. This is most evident in the Zambezia province, where political dynamics have led to limited investment in development or infrastructure improvement compared with other areas of the country. Furthermore, one of the results of the protracted civil war was a wanton stripping of symbols of Frelimo achievements in the Zambezia province by the then rebel Renamo movement, which led to the destruction of schools, clinics, administrative buildings and transport infrastructure. The absence of infrastructure and administrative resources has retarded economic development in the province.<sup>101</sup> With very little in the way of well-equipped hospitals, communications and transport infrastructure, Chinde remains acutely vulnerable to climate impacts and thus may be a flashpoint for

conflict should climate change introduce severe resource constraints or exacerbate existing resource-related tensions.

### **Social identities**

An oft-cited reason for the meagre amounts of drought relief and emergency aid extended to the Bulawayo region during Zimbabwe's recent political crisis, as well as the inability of the government to fund the long-awaited Zambezi–Bulawayo water transfer scheme, is that the region is dominated by people from the Ndebele ethnic group, whereas the seat of government is in Shona-dominated provinces. Similarly, nowhere in Mozambique is a heightened sense of collective marginalisation as discernible as in the northern provinces, and particularly in Zambezia. The collective identity found in these areas is not merely a function of experiences from previous armed conflicts, but is also founded on feelings of socio-economic marginalisation and political affiliation. If climate change impacts, particularly flooding, were to cause mass displacement of populations, any movements into the Chinde district would be met with already existing, and shared, anxiety over the adequacy of the available infrastructure and food, water, health, and other social services in Chinde's communities. The likelihood of migration-induced conflict increases if environmental migrants have to compete with residents for scarce resources such as farmland, housing, water, employment, and basic social services, or if they are perceived to upset the 'ethnic balance' in a region.<sup>102</sup>

### **Adaptive capacity and resilience**

Adaptive capacity and resilience of communities are mediated by many internal and external factors. Such factors include the human skills set, education and literacy, information availability, rules and regulations, available infrastructure, technology and material resources, social networks, trade patterns and economic performance, and quality of political governance. Many of these factors score in the low indices for both Bulawayo and Chinde, leading to a generally low ability for communities to adapt to the effects of climate change and incrementally build resilient livelihoods. In Chinde, for instance, widespread poverty and underdevelopment limit opportunities to support anything beyond a meagre subsistence existence, and the absence of household assets undermine an adequate adaptive response to climate change impacts and the building of resilience at household and community levels. There are few opportunities for earning a cash income in Chinde and the population survives mostly on meagre incomes from fishing, subsistence agriculture, exploitation of coconut plantations, wood collection and petty trading. Local livestock holdings, especially cattle and goats, were decimated during the civil war. Livestock restocking programmes have been under way over the past decade, but most households own only chickens.<sup>103</sup> Trade in Chinde is mainly local and in the hands of small traders. However, opportunities for local traders are limited by poor transport infrastructure, which makes the area relatively isolated and results in limited market interaction with neighbouring areas.<sup>104</sup>

In Bulawayo the legacy of the Economic Structural Adjustment Programmes<sup>105</sup> of the 1990s, coupled with the recent economic meltdown in Zimbabwe and its disproportionately severe impacts on Bulawayo, have left people with very little resources to support their livelihoods. Only a minority of residents are in formal employment,

while most people now rely on income-generating strategies covering illegal, semi-legal and precarious legal activities, such as small-scale cross-border trading, as a source of livelihood.<sup>106</sup> Unemployment and poverty has led to a mass exodus of people, especially among the economically active group of 15–45 years, to neighbouring South Africa, Botswana and Namibia.<sup>107</sup> Whereas a number of community networks still exist for people to mobilise for common action, households have very little of their own resources with which they can begin to build resilient livelihoods.

Strengthening local capacity for prevention and resolution of future climate and natural resource-related conflicts in Bulawayo and Chinde will go hand-in-hand with bolstering adaptive capacity and building resilience among communities. This requires not only the replenishment of the material assets and institutional frameworks that enable communities to survive through difficult times, but also the reinvigoration of community systems for harnessing the social capital, processes and functions required for co-management of dwindling resources. Such systems should provide people with access and influence in community-led decision-making processes. Building resilience hinges on developing the agency and capacity of at-risk communities to overcome the range of challenges they face and determine their own future.

Case studies of the application of the LAC framework in Ethiopia, Ghana, Nepal, Indonesia and Vietnam suggest that enhancing adaptive capacity, resilience and the capacity to manage conflict in communities under climate stress can be achieved through working in partnership with traditional governance structures and strengthening local community-based organisations like co-operatives, savings groups, seed banks, and committees for community disaster risk reduction.<sup>108</sup> Such spaces and processes embedded in the local context have important applications in conflict management, as they allow community-driven processes for management of shared resources, rapid mobilisation of local resources, collaboration and maintenance of social order in times of strife, and opportunities for learning from past disruptions of the social economic order.<sup>109</sup> Existing indigenous and local processes are a viable starting point for addressing climate change-related conflict concerns.<sup>110</sup> Several community-constituted groups exist in both Bulawayo and Chinde, through which initiatives and processes promoting resilience, dialogue, reflection, participatory situation analysis, consensus-building, joint decision making and proactive action to pre-empt conflict can be spurred.

The Bulawayo Progressive Residents Association (BPRA) is a community-driven and membership-based organisation providing a non-partisan and issue-based platform for effective residents and stakeholder participation in local governance.<sup>111</sup> The BPRA holds regular meetings in all the municipal wards at which a wide range of issues relating to the perennial water shortages, poor service delivery, erosion of local autonomy, and lack of transparency and accountability in local governance are discussed.

A second possible entry point for intervention is the Bulawayo Agenda (BA), an association of NGOs with a methodology that makes it particularly suited to enhancing community resilience, identifying conflict risks and resolving conflict. BA brings together community- and faith-based organisations and community-embedded groups, such as residents' associations and burial societies in public debates, community conversations, leadership training and focus group meetings, which provide an environmental scan of issues most affecting the community and seek to devise approaches to address them. An important aspect of BA's methodology is the use of traditional dialogue formats led by

local leaders in the rural and peri-urban areas around Bulawayo, where villagers are given the platform to interrogate issues affecting their communities and devise ways to solve problems as a community.

Through their presence at grass-roots level, faith-based organisations can facilitate the integration and uptake of conflict prevention and resolution practices by the broader community. The Christian Alliance, the Church and Civil Society Forum, and the Habakkuk Trust are three examples of faith-based associations that are actively involved in promoting multilevel responses to water and food insecurity in Bulawayo. These associations have been instrumental in promoting community dialogues while mediating multistakeholder processes, bringing together representatives of local government, NGOs, government agencies and elected community representatives to discuss issues related to water and food insecurity in Bulawayo.

In Chinde, communities are very loosely linked through ties related to socio-economic activities, with fishermen, small traders and plantation workers among the few visible groups. An opportunity lies, however, in the community disaster management committees that have been encouraged by many NGOs present in the area. A struggling community radio, Radio Chinde, also presents a unique opportunity as a tool for encouraging common action among the community. A locally active NGO, Kulima, is a critical player whose community-based approach to rural development, literacy, health education, emergency response, support to vulnerable groups, and environmental projects, including reforestation, provides ready structures for community engagement with issues related to the management of shared natural resources and conflict.

## **CONCLUSION: A RESEARCH AGENDA FOR ENHANCED CONFLICT MANAGEMENT IN A CLIMATE-CONSTRAINED REGION**

The paper concludes by outlining a research agenda towards an improved understanding of the climate change, natural resource management and conflict nexus in the Zambezi basin. Such an understanding is crucial as a starting point towards strengthening the capacity for prevention and resolution of future climate and natural resource-related conflicts in the Zambezi basin.

Further empirical work is needed to understand the pathways through which conflicts related to natural resource governance may arise as a result of more pronounced climate change impacts on livelihoods in the Zambezi basin. The foregoing discussion reveals that consensus remains elusive in the understanding of such mechanisms, pointing to the need for context-specific work in attempts to theorise the interactions between climate change, management of natural resources, and the likelihood of violent conflict.

Existing knowledge on vulnerability in the Zambezi basin suffers from an aggregate bias, in part because available climate projections are somewhat limited in geographic and temporal specificity. Efforts are needed to compile data on micro-level vulnerability, including how climate change will affect specific localities and the extent to which local people are susceptible to climate hazards. Consequences of livelihood insecurity, as may be expected under conditions of climate change, need to be well understood. Related to this, very little data is available on the capacity of specific communities to adapt to climate change in their localities. Adaptive capacity and resilience are still not well mapped at

community scales. There is very little understanding of what assets communities possess to enable coping, and what processes are available for individual and common efforts towards adapting to climate change and addressing resource-related conflicts in the basin. Little is known about the availability of local mechanisms for identifying and managing climate-related conflict risks. Furthermore, the application of resilience thinking, not only to issues of climate change and conflict but to development efforts more generally, is still hampered by its conceptual and definitional ambiguities.<sup>112</sup>

Notwithstanding its localised orientation, the human-security concept remains a function of the state and its operations at local and national scales.<sup>113</sup> Therefore, the role of the state in shaping the environment within which people pursue their livelihoods should be well understood. Furthermore, it is important to investigate the role that institutions (defined broadly to mean predictable arrangements, laws, process, and organisation of social and cultural life as well as relationships and economic transactions at community level)<sup>114</sup> play in enabling successful adaptation to climate change and management of human-security problems. A number of states in the Zambezi basin face various forms of internal and external institutional constraints, which affect their capacity to deliver vital services. Efforts should be redoubled to identify and address factors that might tip fragile situations into conflict under specific types of climate stress.

Lastly, the intellectual work on climate change and conflict would be of limited value if not translated into concrete actions to manage the risk of climate-induced conflict among the most vulnerable. As understanding of the key processes linking climate stress and conflict grows, opportunities and entry points for strengthening local capacities for management of climate and natural resource-related conflict need to be identified, along with research into the nature of required responses, as a starting point for programmatic interventions.

## ENDNOTES

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