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How does climate exacerbate root causes of conflict in Zimbabwe?

Climate Security Pathway Analysis

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This factsheet gives answers on how climate exacerbates root causes of conflict in Zimbabwe using a pathway analysis. Two main pathways are identified:

1. Livelihood and Food Insecurity: Climate change impacts exacerbate socioeconomic vulnerabilities, leading to livelihood and food insecurity and tensions within and between communities. In Zimbabwe, these impacts may increase grievances and polarization between different groups, including political, regional, and ethnic identities, potentially sparking riots, protests, and collective violence between MDC-led municipalities and the ZANU-PF government. Growing livelihood and food insecurity often results in migration towards urban centers and foreign countries, sometimes leading to tensions between migrants and host communities.

2. Resource Availability and Access: The impact of climate change on water, land and food systems undermines the availability of key natural resources in Zimbabwe. This, in turn, risks curtailing the access and availability of key resources like water, increasing the competition over its access and use.

This publication is part of a factsheet series reporting on the findings of the CGIAR FOCUS Climate Security Observatory work. The research is centered around 5 questions*:

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Questions 1, 2, 3, 5 are analyzed at country level through a Climate Risk Lens (impact pathways, economic, spatial, network and social media analyses). The policy coherence and scopus analyses are at continental level.

*Scopus is one of the largest curated abstract and citation databases, with a wide global and regional coverage of scientific journals, conference proceedings, and books. We used Scopus data for analyzing: (1) how global climate research addresses the dynamics between climate, socio-economic factors, and conflict, and (2) how the countries studied are represented in the database.

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1. CONTEXT

Climate exposure and vulnerability

Zimbabwe is a landlocked country situated in southern Africa, bordered by Zambia, Mozambique, Botswana and South Africa. Situated in a semi-arid region and characterized by a subtropical climate, rainfall highly varies across space and time (Unganai, 2009). The rainy season ranges from mid-November to mid-March whereas the dry season is from the former to mid-May (TNC, 2016). Higher altitude areas in the east and centre experience temperatures between 18-22°C, whereas south and north-eastern are characterized by warmer climates with average temperatures between 22-25°C (Brazier, 2015; USAID, 2019a).

Zimbabwe is considered a primary hot spot for climate change with high vulnerability, limited coping capacity and low adaptation readiness (University of Notre Dame, 2022). The country is particularly exposed to tropical cyclones, floods, droughts and dry spells lasting from one to three years and occurring every five to seven years (Brazier, 2015; TNC, 2016). While every district of Zimbabwe has been impacted by droughts throughout time, extreme droughts are particularly prominent in the south-western provinces of Matabeleland North, Bulawayo and Matabeleland South (Frischen et al., 2020). Evidence points out a late onset and early cessation of the rainy season and a rise in temperatures of 0.9°C over the last century, with the greatest temperature increase occurring since the 1980s (Brown et al., 2012; UNFCCC, 2020). Interannual rainfall variability has increased since the late 1960s, indicating a trend of high intensity and frequency of dry spell events and a significant decline in rainy days and the late onset of the rainfall season (UNFCCC, 2022).

An increase in temperatures is projected between 1 to 1.5°C from 2020 to 2040 and from 1.5 to 2°C from 2040 to 2060 (UNFCCC, 2022). During the hottest months of the year (October, November and December), an increase of up to 2 to 2.7°C is predicted (Hunter et al., 2020). Future projections indicate a decline of up to ten percent of the mean national annual projection as well as an increase in the frequency and intensity of extreme precipitation events and flooding periods (UNFCCC, 2022). Droughts and dry spells are expected to increase by 21 percent from 2040 to 2059 and by 47 percent by the end of the century (World Bank Group, 2021). Climate projections indicate the Matabeleland South, Masvingo and Manicaland Provinces to be disproportionately impacted by the projected declines in average annual precipitation (UNFCCC, 2022). Furthermore, while some water reservoirs situated in the northeast of the country are projected to be likely reduced by 49 percent, other smaller ones are expected to completely dry out (Swain et al., 2011).

Conflict and fragility

Zimbabwe effectively became independent from the United Kingdom in 1980 after the Rhodesian Bush War in which the nationalist anti-colonial forces fought against the unrecognized state of Southern Rhodesia. After that, Zimbabwe became a relatively stable country, with low rates of organized violence but with episodes of instability linked to economic hardship and political turmoil (UCDP, 2022). The country has experienced decades of authoritarian rule characterized by corruption and weak governance (Transparency International 2020; Cain 2015).

Tensions between the country's elites can be traced back to the 1980s when the Zimbabwe African National Union-Patriotic Front (ZANU-PF) government systematically suppressed rebels from the Zimbabwe African People's Union (ZAPU), regarded as dissidents, and resulted in the death of an estimated 15,000 to 20,000 civilians, known as the Gukurahundi Massacres (Catholic Commission for Justice and Peace, 1997; Dube, 2021). Since the early 2000s, the Movement for Democratic Change (MDC) has been the main opposition force in the country and has often experienced clashes with the ZANU-PF government group (Swain et al., 2011). State-sponsored violence has prominently been concentrated in parts of the Midlands provinces, Bulawayo, Matabeleland North and Matabeleland South, stronghold of the opposition groups, including ZAPU and MDC (Swain et al., 2011). Grievances and historical marginalization of the Ndebeles, living prominently in Bulawayo and regarded as the main support of the opposition parties (ZAPU and MDC), have led to increasing resentment and mobilization against the government (Swain et al. 2011).

In the last two decades, machete gang violence has spiked across gold mining sites, prominently in artisanal and small-scale areas (Mkodzongi, 2020). Following the economic crisis and the land reforms, Zimbabwe experienced an increase in people employed in the sector as well as in conflicts over the control of gold-rich areas (Mkodzongi, 2020). Tensions have spiked between mining companies and artisanal miners, with some miners denouncing and accusing the ZANU-PF of patronage practices (ICG, 2020). In this context, machete-wielding gangs, also known as Mashurugwi, have emerged as a resistance form against elite capture of mineral resources (Mkodzongi, 2020). Simultaneously, the opposition has also accused the ZANU-PF government of the illegal encroachment of artisanal miners and of mobilizing machete gangs against rivals (ICG, 2020).

Socio-economic context

Natural resources play a crucial role in Zimbabwe's economy, with mineral exports, such as diamonds, gold, platinum, and chrome, accounting for about 60 percent of the country's export earnings and 16 percent of the national GDP (LSE, 2021). Moreover, over two-thirds (67.7 percent) of the country's population resides in rural areas, reinforcing the significance of the country's agricultural and resource sectors (CIAT & World Bank, 2017). Agriculture, forestry and fishing, which account for 8.8 percent of Zimbabwean GDP, are highly climate-sensitive sectors (WB, 2021). They are the main source of livelihood for 90 percent of rural households and provide employment for approximately 66 percent of the population (WB 2019; USAID, 2019a). The agricultural sector contributes to 40 percent of the export earnings and supplies 60 percent of the industrial raw materials (UNFCCC, 2020). Considering that 80 percent of the agricultural production is highly reliant on rainfed crops (i.e., maize, sorghum, wheat, millet), the sector is considered to be extremely vulnerable to higher temperatures and rainfall variability (Chanza & Gundu-Jakasi, 2020; Chingarande et al., 2020).

In the last decades, Zimbabwe's populations standard of living has experienced a general decline linked to low or even negative economic growth along with high unemployment and poverty, rapid population growth, low agricultural productivity, episodes of hyperinflation and recurrent droughts (Gebremichael et al., 2018; Hunter et al., 2020). Poverty is widespread across the country, with 72 percent of the population below the national poverty line, of whom 84 percent live in rural areas (CIAT & World

Bank, 2017). Combined with the former, increases in cereal prices and ongoing cash shortages have led Zimbabwe to experience high rates of chronic hunger, with nearly one in three children under five years suffering from malnutrition and 93 percent of children between 6 months and 2 years old not consuming a minimum acceptable nutritious diet (Chamunogwa, 2021a; 2021b; UNICEF, 2020). On a national level, 7.6 million people, equivalent to 44.4 percent of the population, are estimated to be resorting to food-based coping strategies, with Matabeleland North (59 percent), Manicaland (56 percent), Masvingo (52 percent) and Midlands (49 percent) being the provinces with the highest prevalence (FAO et al., 2022).

Zimbabwe has transitioned from being southern Africa's largest food exporter to a nation dependent on food imports as well as international aid, with food exports decreasing from 56 percent in 2001 to 16 percent in 2021 (Mazzeo, 2011; World Bank, 2023). Zimbabwe's agricultural sector faces several challenges, including environmental degradation, inadequate support systems, as well as poor and depleted soils, compounded by erratic rainfall, floods and droughts (Kandji et al., 2006; FAO et al., 2022; WFP, 2022c). The current food situation is precarious, with up to 30 percent of the rural population food insecure and at least 49 percent of the national population living in extreme poverty (WFP, 2022b). Additionally, projections indicate that by 2050 population will be doubled and reach 29.6 million (World Bank et al., 2018). Despite an increasing demand for food, Zimbabwe relies on food imports from its neighbouring countries (66 percent), which exacerbates its vulnerability to climate change impacts, particularly in the south and west of the country (Hirji and Davis, 2014; IEP, 2022; Kandji et al., 2006; CIAT & World Bank, 2017). Climate change impacts may exacerbate Zimbabwe's dependency on foreign food importations, mainly coming from South Africa and Zambia (USAID, 2019b).

2. CLIMATE SECURITY PATHWAYS

Zimbabwe is particularly vulnerable to climate change impacts due to its heavy dependence on rainfed agriculture and climate-sensitive livelihoods (Chagutah, 2010). Extreme weather events, prominently drought, floods and dry spells threaten development gains and intensify existing natural hazard burdens for at-risk populations (Hellmuth et al., 2007). Agriculture sensitivity to climate-induced water stress is intensifying existing problems of declining agricultural outputs and economic productivity, consequently exacerbating poverty and livelihood and food insecurity, particularly of smallholders. While climate variability has already impacted Zimbabwe's water resources, climate projections indicate these effects to become more severe over the next century, particularly in the south and western regions of the country (David & Hirji, 2014). By 2050, maize and cotton crops, essential crops for Zimbabwean food and livelihood security, are expected to decrease due to declines in climate suitability, with yield declines of up to 30 percent (USAID 2019b). Estimates indicate that if by 2100 no adaptation responses are taken, crop net revenues could decline by up to 90 percent (USAID, 2019b).

In this section, we explore the impacts of climate change variability through two pathways: (i) livelihood and food insecurity and (ii) resource availability and access.

PATHWAY #1: Livelihood and food insecurity

Climate change impacts exacerbate socioeconomic vulnerabilities, leading to livelihood and food insecurity and tensions within and between communities. In Zimbabwe, these impacts may increase grievances and polarization between different groups, including political, regional, and ethnic identities. This can lead to riots, protests, and collective violence between MDC-led municipalities and the ZANU-PF government. Growing livelihood and food insecurity often results in migration towards urban centers and foreign countries, which can sometimes lead to tensions between migrants and host communities

Zimbabwe's agriculture industry is highly dependent on rainfed agriculture and climate-sensitive crops (Chagutah, 2010). Recent surveys conducted in Lupane and Lower Gweru show that up to 70 percent of the farmers are already perceiving changes in weather patterns and a greater impact on their livelihoods during the past five years (Mubaya et al., 2012). Despite this, smallholder farmers in Zimbabwe resist replacing maize crops with small grains as a strategy for adapting to climate impacts (Phiri et al., 2019). High labor costs, combined with lack of technology and poor market infrastructure are the primary factors that discourage smallholders from transitioning to sorghum and millet production (Phiri et al., 2019).

While Buhera (Manicaland), Mount Darwin (Mashonaland Central), Gokwe South (Midlands), Beitbridge, Gwanda, Matobo and Mangwe (Matabeleland South) are the districts with the highest drought risks, Chipinge (Manicaland) is at the highest risk of drought to irrigated agricultural systems (Frischen et al., 2020). The greatest declines in productivity, ranging from 60 to 79 percent, are expected to be in the Matabeleland North and Midlands provinces (Hunter et al., 2020). Longer periods with higher temperatures are expected to further increase the already existing trend of declining yields, crop diseases, pests as well as degradation of land and water resources (Chanza & Gundu-Jakarasi, 2020; Chidakwa et al., 2020; Hunter et al., 2020; Swain et al., 2011). The combination of increased temperatures with erratic rainfall in Zimbabwe will continue to exacerbate crop failure of maize, sorghum, beans, groundnuts and cotton (Hunter et al., 2020; CIAT & World Bank, 2017). Maize, which is crucial for the national diet and accounts for 80-90 percent of the domestic staple crop production is projected to experience a decline of 5-59 percent of its productivity by 2050 (Hunter et al., 2020, USAID, 2019a). This is expected to consequently have an economic impact equivalent to a loss of 230,000 tones per annum and a total annual replacement cost of USD 89 million per year (Hunter et al., 2020; USAID, 2019a). The most severe negative impacts of the change in production per capita are in the Matabeleland North province, where maize's annual production is expected to decrease by 81.4 percent (Hunter et al., 2020). Similarly, cotton yields, one of the main agricultural exports together with maize, are expected to decrease up to 30 percent due to reduced climate suitability (USAID, 2019b). If no adaptation measures are taken, cotton revenues are predicted to decline to as much as 90 percent by 2100 (Chatiza, 2019; USAID, 2019b). Similarly, cyclone events and floods, particularly prominent in the Eastern Highlands, lead to the loss of land, livestock and field crops, in addition to damaging infrastructures, hindering the distribution of relief aid as well as water and sanitation services (Munsaka et al., 2021; UNFCCC, 2022).

Extreme heat, intense rainfall events, floods and dry spells are among the most significant stressors that the livestock sector faces (USAID, 2019a). In Zimbabwe, livestock ownership is an important resilience strategy in rural and semiarid regions, as they are a key source of food, income and capital for smallholder farmers (Mazzeo, 2011; USAID, 2019a). Cattle is the most abundant livestock animal, with figures indicating that 60 to 75 percent of households own at least one (USAID, 2019a). In light of the increased dependence on purchased food in times of severe droughts and dry spells, the ownership of cattle is deemed as one of the key coping strategies for households, as they can be sold to alleviate the need for cash for the purchase of food or other needed commodities (Mazzeo, 2011). Indeed, evidence points out that households owning cattle experience higher success rates in maize cultivation and harvest as well as lower crop failure. This is because cattle provide draft power for cultivation as well as manure to maintain moisture and soil fertility (Mazzeo, 2011). Decreased precipitation, combined with intense dry spells and rainfall, is expected to have negative implications for livestock health, increasing the occurrence of crop pests and livestock diseases and, therefore, reducing households' livestock production (USAID, 2019a).

Climate change is also expected to accelerate the declining trends in fisheries, resulting in negative socioeconomic effects on fishing and fish-dependent communities, such as the Lakes in Chivero, Manyame and Kariba (Utete et al., 2018; Muringai, Naidoo et al., 2020; Muringai, Mafongoya et al., 2022). Evidence from Lake Manyame indicates a significant decline in fish catches from 1977 to 2016, impacting freshwater biodiversity. This shift has transformed the basins from habitats supporting multiple species to ones dominated by either one or a few species of fish (Utete et al., 2018). Declining incomes linked to low fishery catches negatively impact households' food access and availability, preventing the purchase of sufficient nutritious food or diversifying the diet in municipalities nearby Lake Kariba (Muringai et al., 2020). While the majority of fishers increase fishing time and change fishing gear to compensate for declining catches, some choose to target new fish species, diversify their livelihoods, or migrate to new fishing communities (Muringai et al., 2022).

Zimbabwe ranks among the top six countries most affected by natural hazards, experiencing a fifty percent higher likelihood of flooding compared to the global average (Hallegatte et al., 2017). Climate change presents a threat to human security, particularly for women in rural areas who have limited access to productive resources and rely heavily on natural resources for food and income (Chidakwa et al., 2020; Muchacha & Mushunje, 2019). In Zimbabwe, 70 percent of women are smallholder farmers dependent on rainfed agriculture and climate-sensitive resources (Madzwamuse, 2010). Extreme events, such as cyclone Idai, have induced landslides and floods, severely impacting infrastructures, such as roads, schools, households and hospitals and, consequently the access and availability of food (Chamunogwa, 2021a). Similarly, the depletion of natural resources impacts women's livelihood opportunities and access to water resources, causing them to travel longer distances as well as face an increased risk of sexual abuse to attain them (Chamunogwa, 2021b; Chingono, 2020). A study from the southeastern rural district of Chiredzi identified the most vulnerable households to climate change to be poor, female-headed and child-headed households and those lacking access to irrigation (Brown et al., 2012). This is particularly concerning as women, as primary caregivers, have been identified to be key actors in ensuring food security in households (Chidakwa et al., 2020).

Considering the high dependence of rural areas on natural resources as a source of livelihood and food security, climate-driven loss of livestock and crop production pushes subsistence farmers to face double jeopardy (Kandji et al., 2006). First, locally-produced food is not sufficiently available (Kandji et al., 2006). Second, even when food is available in the market, prices are significantly high due to increased demand and lower availability. Consequently, many households, particularly those dependent on agriculture for income and employment, cannot afford to purchase nutritious food (Kandji et al., 2006; Mason et al., 2010). Time periods following droughts and economic recessions have lower food production rates and experience a higher prevalence of underweight and malnutrition rates the following year (Mason et al., 2010). For instance, following a drought and economic recession period from 2000 to 2002, underweight prevalence increased from 5 to 10 percent in comparison to pre-2000 levels (Mason et al., 2010). Similarly, in 2019, following Cyclone Ibai, the Buhera District, a province contributing to 15 percent of the national cereal reserves, experienced losses of 7,000 hectares of maize (Chingarande et al., 2020; FEWS NET, 2019). As most of the poor households exhausted their own production stocks, maize prices increased up to 74 percent, consequently deteriorating livelihood and food security in the impacted areas and increasing the reliance on humanitarian assistance in order to address food consumption gaps (FEWS NET, 2019).

Increased climate-driven livelihood and food insecurity may further polarize social identities and increase already existing grievances between different groups in which political, regional and ethnic identities often overlap, spurring riots, protests and collective violence against the government (Swain et al., 2011). Particularly, the Ndebeles have been historically associated with the MDC opposition party and geographically concentrated in Bulawayo and the Matabeleland region, while the Shonas have been associated with the ruling party, ZANU-PF (Swain et al., 2011). In an already tense context characterized by strong polarized identities and historical grievances, environmental degradation exacerbated by climate change could spur protests, riots and collective violence, deepening existing tensions (Aljazeera, 2019; Swain et al., 2011).

Climate-induced livelihood and food insecurity are also increasing migration towards urban centers (i.e., Harare and Bulawayo) and neighbouring countries, prominently South Africa, the United Kingdom, Malawi, Australia and Botswana (Chidakwa et al., 2020; WFP et al., 2022; Migrants Refugees, 2022). The provinces with the highest outflow rates are Matabeleland South (Beitbridge 41 percent), Harare (12 percent), Masvingo (Masvingo 8 percent and Chiredzi 8 percent) and Manicaland (Chipinge 20 percent) (WFP et al., 2022). Since 1990, Zimbabwe has experienced an increase in irregular migration, driven by economic and political instability, poverty and hyperinflation of more than 700 percent (Munyoka, 2020; Idemudia et al., 2013). Currently, declining food access, together with loss of the source of income and health issues, has been identified as one of the key driving factors for rural and urban migration (Munyoka, 2020; WFP et al., 2022). Men and young populations are identified as the most prominent family members to migrate seeking employment (Belle et al., 2017; Chidakwa et al., 2020).

The perception of increased competition for basic services, employment opportunities and resources that displaced and migrant population pose can be regarded as a risk in host communities, where migrants are accused of overburdening already strained economies (Maunganidze et al., 2021; Munyoka 2020; Seyuba & Ferré Garcia, 2022). For instance, South Africa, home to 1.5 million

Zimbabweans and one of the main destinations of migrants seeking employment opportunities, has already expressed its concern over an increased influx of Zimbabwean migrants and recently decided to deport 180,000 back to Zimbabwe (Chirume, 2022; IOM, 2016; Munyoka 2020). Strongly influenced by the dissemination of xenophobic narratives and hate speech, this situation has produced an intensification of racist hate attacks and increased tensions between local South Africans and Zimbabwean migrants not just in urban areas but, more recently, also in rural areas (Banda & Mawadza, 2014; IWPR, 2008; Matiashe, 2022; Mohamed, 2022; Scheen, 2011).

Livelihood and food insecurity in Matabeleland

Bulawayo is the second largest city in Zimbabwe and one of the out-migration hotspots of the country (Zimbabwe National Statistics Agency, 2022). In addition to being one of the most food-insecure regions of the country, together with the Matabeleland North province, Bulawayo is historically known to be the stronghold of the opposition against the government (Swain et al., 2011). While droughts frequently occur in Zimbabwe, provinces situated in the southwestern provinces of Matabeleland North and South, the city-province of Bulawayo embedded between the former provinces, is strongly impacted by them (Frischen et al., 2020). The lack of strong institutions and effective governance that curtail socio-economic development along with historical grievances may increase the likelihood of collective violence (Swain et al. 2011).

Urban households, particularly those headed by females, experience high rates of poverty and food insecurity in Bulawayo (Ndlovu et al., 2021). In recent years, the worsening of the economic situation, which has led to cash shortages, high food prices, loss of employment and high fuel prices, has exacerbated food insecurity and livelihood opportunities, particularly for poor urban households (Ndlovu et al., 2021). Evidence from the Njuve and Makokova townships indicates that 68 percent of study respondents reported that they were not able to eat preferred food items on a regular basis, 58 percent went to bed hungry due to inadequate daily food intake and up to 29 percent spent the whole day and night without eating (Ndlovu et al., 2021). While famine early warning systems expect Bulawayo to continue being categorized as stressed, with limited access to minimal basic food, the provinces surrounding the city-province, Matabeleland North and South, still hold higher values of food insecurity, ranking to still being in crisis despite the start of the rainy and planting season (FEWS, 2022).

Matabeleland North and South's high levels of food insecurity are crucial to Bulawayo as they represent a significant source of demand for food relief programs and could exacerbate the city's already dire situation if not addressed effectively. Climate projections are expected to have the most severe negative impacts on the change in production per capita in the Matabeleland North province, where maize's annual production, a key crop in Zimbabwe's diet, is expected to decrease by 81.4 percent by 2050 (Hunter et al., 2020). Despite Matabeleland's higher access to land for cultivation, Matabeleland North still remains one of the poorest provinces, with 57,9 percent (370,584) food insecure households (Chingarande et al., 2020; Swain et al., 2011). Over 16 percent of the households of migrants experienced moderate or severe hunger before the family member migrated (WFP et al., 2022). Food insecurity is found to be associated with migration. The regions holding the largest migrant-sending and receiving inflows, coincide to be the largest food-insecure areas in the country (WFP et al., 2022). Due to the persistent food insecurity in rural households of Matabeleland North

and South caused by climate-induced droughts, Bulawayo, as the regional hub, is anticipated to remain a top destination for internal migration and to continue being one of the most populous urban areas in Zimbabwe, alongside the capital city, Harare (Hunter et al., 2020; WFP 2022a; 2022b).

Since the mid-1990s, recurring droughts have resulted in frequent food shortages, episodes of heightened food insecurity, and food riots due to the limited ability to manage and alleviate temporary food shocks (Chagutah, 2013; Swain et al., 2011). In the last decade, discontentment with the worsening economic situation and the lack of food access and availability has triggered protests and riots (FAO, 2022; Swain et al., 2011). For instance, in November 2012, a three-day strike of water protests coordinated by the Women of Zimbabwe Arise led to allegations of deliberate marginalization of Bulawayo by the government as well as warnings of revolts against the water crisis which could lead to massive violent protests (Chagutah, 2013). Evidence points out the political use of natural resources by the ZANU-PF government, including the use of water as an instrument of coercion towards MDC-led municipalities, to make the opposition lose legitimacy and support in these territories (Museumwa, 2006). In light of this, more intense and frequent droughts are expected to exacerbate water stress and, in turn, tensions between the government and opposition supporters in Bulawayo over the access and control of resources (Nyoni, 2008).

In a context of limited institutional support to address climate impacts, climate-driven food and water insecurity may further polarize social identities and grievances between the local population and the government, in addition to increased elite-sponsored organized violence (Swain et al., 2011). Four actors who have been identified to potentially instigate violence are: ZANU-PF dignitaries, leaders of the Zimbabwe Liberation War Veterans Association, armed forces as well as police corps (Swain et al., 2011). In an already tense context characterized by polarized identities and historical grievances, environmental degradation exacerbated by climate change could spur protests, riots and collective violence, deepening existing tensions between the central government and the opposition and MDC supporters in Bulawayo (Aljazeera, 2019; Swain et al., 2011).

PATHWAY #2: Resource access and availability

The impact of climate change on water, land and food systems undermines the availability of key natural resources in Zimbabwe. This, in turn, risks curtailing the access and availability of key resources like water, increasing the competition over its access and use.

Recurrent drought episodes, including those that took place in 1991-1992, 1994-1995, 2002-2003, 2015, and 2018-2019, have directly impacted water scarcity and led to water stress in urban centres, such as Bulawayo and Harare, and different parts of the country, prominently the south-western provinces Matabeleland North and Matabeleland South (Frischen et al., 2020; Kugarakuripi, 2021). The impact of these persistent drought episodes has deteriorated the water supply by reducing water availability of surface water (accounting for 90 percent of the national supply), and have consequently impacted agricultural and livestock production, in addition to increasing waterborne diseases, such as the 2008 and 2018 cholera outbreaks (Brown et al., 2012; Chamunogwa, 2021a; UNFCCC, 2016, 2022; Museumwa, 2021).

Access to clean water has substantially declined in the last 40 years, indicating a decrease from 84 percent in 1988 to 64 percent by 2017 (Kugarakuripi, 2021). Water shortages are more prominent in urban areas, with figures of 62 percent in urban households and 44 percent in the case of rural households (Kugarakuripi, 2021). Water scarcity leads women and girls to travel longer distances to fetch water, increasing their risk of being abused and subjected to sexual violence (Chidakwa et al., 2020). Deeply rooted in the colonial urban water system, urban areas as Harare have inherited an unequal distribution pattern of water and sanitation, which has intrinsically replicated colonial resource inequalities over time and exacerbated racial and urban residential segregation (Museumwa, 2021). The lack of investment in the construction of new dams and rehabilitation of existing reservoirs has further exacerbated the water challenges in urban and rural areas of Zimbabwe (Cassim, 2021). For instance, in 2021, despite recording good rainfall rates in the previous rainy season, the capital city of Harare still experienced serious water shortages due to dried water dams (Cassim, 2021). Annual rainfall levels are predicted to decrease by 2080 between 5 and 20 percent in Zimbabwe's main river basins (Brown et al., 2012). Similarly, evaporation rates in river basins are expected to decline between 4 and 25 percent and runoff could decline as far as 60 percent in some cases, particularly impacting the Zambezi Basin (Brown et al., 2012; WBG, 2021). These dynamics are expected to continue curtailing water availability and compounding water scarcity across the country.

In this context, the impact of climate change on the access and availability of natural resources, mainly water, risks increasing the competition over its access and use. This, in turn, risks exacerbating existing grievances, inequalities and tensions. Drought shocks are associated with an increased likelihood of water point violence only if the principal water-fetcher is a woman or girl (Chigusiwa et al., 2021). At the same time, violence between elites over the control and exploitation of scarce resources is likely to increase, especially in Bulawayo/Matabeleland-North, provinces ruled by the MDC opposition party, characterized by weak governance and historical tensions with the government (Swain et al., 2011). Climate variability is expected to continue exacerbating, encouraging violent elite competition over scarce resources as well as the political use of natural resources and fears over resource scarcity to reward or punish certain constituencies (Swain et al., 2011). For instance, in 2016, the ruling party was accused of strategically withholding food aid from opposition forces as an electoral tactic in rural areas experiencing climate-driven starvation (BBC, 2016). In times of food and water crises, the ZANU-PF and the opposition elites' disagreements have escalated into political conflicts between the national and local authorities (Swain et al., 2011).

In the current context of limited resources in areas such as Bulawayo and Matabeleland North, the potential impact of dry spells, droughts, and inadequate precipitation rates may intensify the risk of patronage, rent-seeking, and competition for resources (Chagutah, 2013). Additionally, due to the use of water as a coercion instrument by the government, tensions could escalate, potentially leading to violent conflicts between elite groups from the ZANU-PF and MDC parties, as competition for increasingly scarce resources grows (Museumwa, 2006; Swain et al., 2011).

Resource access and availability in Matabeleland

Situated in the southwestern part of the Matabeleland region, the city of Bulawayo faces a wide range of challenges related to access and availability of resources, including water and electricity (Chingono, 2020). These challenges are compounded by the increasing demand for natural resources,

rising temperatures and decreasing precipitation can contribute to increased water scarcity lower groundwater recharge and runoffs (The World Bank Group, 2021). In Bulawayo, the overlap between a highly climate-vulnerable region and the existence of strong ethnic, regional and political identities can further increase the grievances among opposition groups against the government and competition over scarce natural resources, such as water (Swain et al. 2011).

Water scarcity and shortage have been identified to be one of the most significant climate impacts affecting Bulawayo and the neighbouring province of Matabeleland-North (Chagutah & Mwaniki, 2011). Women and children are particularly vulnerable as they face a higher risk of abuse and sexual violence since sexual favours are often demanded in exchange for water (Chingono, 2020). While Bulawayo's water scarcity problems can be traced back to 1980, more severe and recurrent droughts have worsened the situation, leading to strict water rationing and frequent water cuts (Hadebe, 2015; Mwadzingeni et al., 2022). Recent reports indicate up to 59 percent of the population in the region has experienced a prolonged lack of access to clean water during the past year, with households unable to access running water for up to four days due to limited water supply in dams (Kugarakuripi, 2021; WEF, 2020).

Combined with increasing population growth and demand, water resources are declining, and reserves are lower than 30 percent of capacity due to climate change impacts and resource mismanagement (The Water Diplomat, 2022; Mwadzingeni et al., 2022; Ndhlovu, 2020). The situation has led to long-standing disputes between the central government, the Bulawayo City council, and water users over resource access, exacerbating tensions among the community (Chagutah, 2013; Musemwa, 2006). In 2022, the city council was forced to introduce a water-shedding schedule in some suburbs to be able to cope with the high demand and poor rain inflows (The Water Diplomat, 2022). Overall, the combination of poverty, food insecurity, and the competition over water resources has created a challenging situation for the communities residing in the region.

Resource access and availability in the Zimbabwe's Zambezi River Basin

The Zambezi River Basin (the major river in Southern Africa), situated on the Zimbabwe and Zambia border, has been reported to follow the trend in Southern Africa and experience increased competition for water resources (Adaawen et al., 2019; Beck and Bernauer, 2010; 2011; Seyuba & Ferré Garcia, 2022). While most of the average annual flow evaporates from hydroelectric reservoirs, only one-quarter of the 100 cubic kilometers is used (Pearce, 2013). These hydroelectric farms, such as the jointly owned by Zimbabwe and Zambia in Kariba, have the ability to hold back wet-season high flows, consequently delaying and enfeebling the river flow downstream (Pearce, 2013). Together with the projected increased demand for water resources in the upstream basin country of Zambia, climate change is expected to reduce the water flow of the Zambezi basin and, in some scenarios, even water availability across the river and sub-basins, with particular emphasis on Lake Kariba, situated on the border between Zambia and Zimbabwe (Beck and Bernauer, 2010; 2011).

In drought periods, when local water stress increases, farmers tend to adopt small-scale irrigation as a coping mechanism to maintain their agricultural activity (Pearce, 2013). While these practices are particularly prominent in the Chinyanji Triangle, a basin bordering Malawi, Mozambique and Zambia, they can also be observed throughout the eight downstream neighbours (Pearce, 2013). In

light of an increased occurrence of droughts and dry spells, farming areas face an increasing need for water resources to cope with agricultural demand for irrigation schemes and livestock needs, essential for their livelihood and food security. In the past years, local tension, especially among the poorest communities has risen over water resources due to water scarcity (ZimVAC, 2022; Zvomuya, 2017). Similar tensions have risen within the fishing community, whose livelihoods have been severely impacted by the reduction of river flow and the consequent 60 percent decline in prawn catch and an overall decline in fish stocks (Muringai et al., 2022; Zvomuya, 2017). According to the latest Rural Livelihoods Assessment Report, the regions close to the Zimbabwe border with Mozambique and Zambia have among the highest rates of violence at water points, with the districts of Mount Darwin and Gokwe North having the highest reported violence in the country (ZimVAC, 2022).

While both Zimbabwe and Zambia have formalized water sharing and water management arrangements, effective enforcement of these treaties remains limited in the SADC region (Adaawen et al., 2019). Recently, Zambia has launched a plan for a mega-dam in the Batoka gorge, right upstream of the Kariba dam, and an initiative to encourage the sale of Zambezi waters to do large-scale water transfers (Pearce, 2013). Meanwhile, the national government recently relaunched the development of the National Matabeleland Zambezi Water Project (NMZWP), a megaproject to divert water from the Zambezi River towards Bulawayo and the Matabeleland North regions so as to alleviate persistent water scarcity (Nyoni 2008; Tshili, 2022). Recently, tensions over the water quotas in the hydro plant at Kariba have also risen following Zimbabwe's overuse of water for electricity generation (Green Building Africa, 2023; ZAWYA, 2023).

As climate change increasingly curtails water availability across the Zambezi River Basin, local and transboundary tensions are expected to continue and arise due to competition over water resources. First, in the contiguous and downstream neighbouring basin countries of Zimbabwe and Mozambique, declined access and availability of natural resources is expected to increase competition over water resources between Zambia and the two downstream neighbouring countries. If governments do not enforce effective governance mechanisms for water allocation, an escalation of tensions and transboundary conflicts are expected to arise (Beck and Bernauer, 2010; 2011; Goulden et al., 2009). Simultaneously, at the local level, increased water scarcity exacerbates the already existing trend of violence at water points.

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About CGIAR FOCUS Climate Security

CGIAR aims to address gaps in knowledge about climate change and food security for peace and security policies and operations through a unique multidisciplinary approach. Our main objective is to align evidence from the realms of climate, land, and food systems science with peacebuilding efforts already underway that address conflict through evidence-based environmental, political, and socio-economic solutions.