

REPORT ON

Climate Justice in Southern Africa

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Summary

This paper discusses climate change and climate justice in Southern Africa through human rights and social justice lenses. It draws on substantial evidence showing the region's exposure to extreme climate-related events such as floods, droughts and cyclones as well as unprecedented rainfall and temperature variations. It uses some cases from across the region including national experiences with Cyclones Idai and Kenneth for Malawi, Mozambique and Zimbabwe. These cases show that extreme weather events are impacting communities economically and socially due to environmental losses, damage to infrastructure and erosion of livelihoods with consequences for human rights and social justice in the region. At regional, national and local level policies, laws and strategies seem inadequate and poorly coordinated to protect the most vulnerable members of affected communities. The region's vulnerability largely arises because most residents heavily depend on livelihoods that lean on natural resources like land, water and forests, which are affected by climate change. The advent of COVID-19 in 2020 compounded impacts of climate change. Reliance on coal-based energy is also an issue. There are regulatory capacity gaps at country and regional levels which compound these issues. Poor and most vulnerable residents in specific geographies characterised by limited adaptive capacities are affected the most by these issues. This brings out the interconnectedness of the public health pandemic and climate change-induced disasters. In essence the complex relationship arising from stresses in governance, ecosystem services, economies and local knowledge systems exacerbated the impacts of COVID19. There are lessons to be drawn from dealing with the COVID19 pandemic. They include the positive focus it brought on the importance of national political and executive leadership as well as broad social mobilisation. These underlined comprehensive responses to the crisis and provide a basis for inclusive and sustainable pathways towards recovery and development post-COVID19.

List of abbreviations

ACB	African Centre for Biodiversity
AMCEN	African Ministerial Conference on Environment
ASSAR	Adaptation at Scale in Semi-Arid Regions
CJC	Change Justice Charter
COPAC	Co-operative and Policy Alternative Centre
COVID	Corona-Virus Disease
CSO	Civil Society Organisation
FAQ's	Frequently Asked Questions
FAO	Food and Agriculture Organisation of the United Nations
GDP	Gross Domestic Product
GEF	Global Environmental Facility
GFDRR	Global Fund for Disaster Risk Reduction
GHG	Greenhouse Gas
ICCCAD	International Centre for Climate Change and Development
IIED	International Institute for Environment and Development
IISD	International Institute for Sustainable Development
IOM	International Organisation for Migration
ISS	Institute of Security Studies
ITCZ	Inter-tropical Convergence Zone
MtCO ₂ e	Metric tons of carbon dioxide equivalent
NAPAs	National adaptation programmes of action
NGO	Non-governmental Organisation
OCHA	United Nations Office for the Coordination of Humanitarian Affairs
SADC	Southern African Development Community
SAFSC	South African and Food Sovereignty Campaign
SDG	Sustainable Development Goal
TRALAC	Trade Law Centre
UN	United Nations
UNDP	United Nations Development Programme
UN-ECA	United Nations Economic Commission for Africa
UNFCCC	United Nations Framework Convention on Climate Change
UNFPA	United Nations Population Fund
UNHCR	United Nations High Commissioner for Refugees
USAID	United States Agency for International Development

USD
WFP
WHO
WRI

United States Dollar
World Food Programme
World Health Organization
World Resource Institute

1. Introduction and Conceptual Framework

This paper presents findings and analysis of a desk review into climate justice issues in Southern Africa. The review was conducted in a context of climate change, which is impacting individuals, families, communities, subnational territories and countries in the region. Climate change impacts are differential, which brings about climate injustice. The paper shows that underlying structural factors behind inequality, poverty and unsustainable development are the same ones driving climate injustice.

UNFCCC (2012) defines climate change as 'significant changes in global temperature, precipitation, wind patterns and other measures of climate that occur over several decades or longer'. Attention to climate change and sustainability issues received more intense attention in the late 1980s with the Brundtland Commission and since the 2000's Summit held in Southern Africa. The intensity has thus spanned a generation. The advent of the COVID-19 pandemic has brought the links between public health and climate change into sharp focus. As UNECA (2020a:3) observes:

'Research suggests that the emergence of new human diseases is closely linked to loss and degradation of ecosystems and habitats, which in turn is driven by climate change, resource extraction, urban and agricultural expansion and pollution. Rising temperatures have been linked with changes in the range of malarial mosquitoes, and the spread of malaria and the Zika virus'.

The interconnections between public health issues and climate change are thus clear. These mostly affect the most vulnerable people where resilience and coping strategies are weak. Poor people, residents of informal settlements and other marginal areas are the most vulnerable (United Cities and Local Governments, 2020; World Economic Forum, 2020). Communities can learn from COVID-19 and improve on the fight against climate change (UNHCR, 2020; World Economic Forum, 2020). This is because COVID-19 exposed the need for countries to support individuals to develop and apply strategies in response to global problems (UNHCR, 2020). This implies that fighting against climate change requires putting the most vulnerable at the centre making good governance critical to responding to emergencies of different types.

The impacts of climate change affect people differently. This may depend on their livelihoods, coping strategies and available social protection systems (Patterson et al, 2017; World Economic Forum, 2020). Impacts of climate change on different socio-economic groups in different locations or jurisdictions vary. What is generally acknowledged is that climate change and COVID19

disproportionately affect historically marginalised communities (Patterson et al, 2017). In this paper the question on how COVID-19 impacts the fight for climate justice is explored. Emerging policy and academic debates suggest the imperative to respond to both based on listening to science and working with affected communities (UNHCR, 2020; World Economic Forum, 2020). This is because, as noted by UNECA (2020a:4):

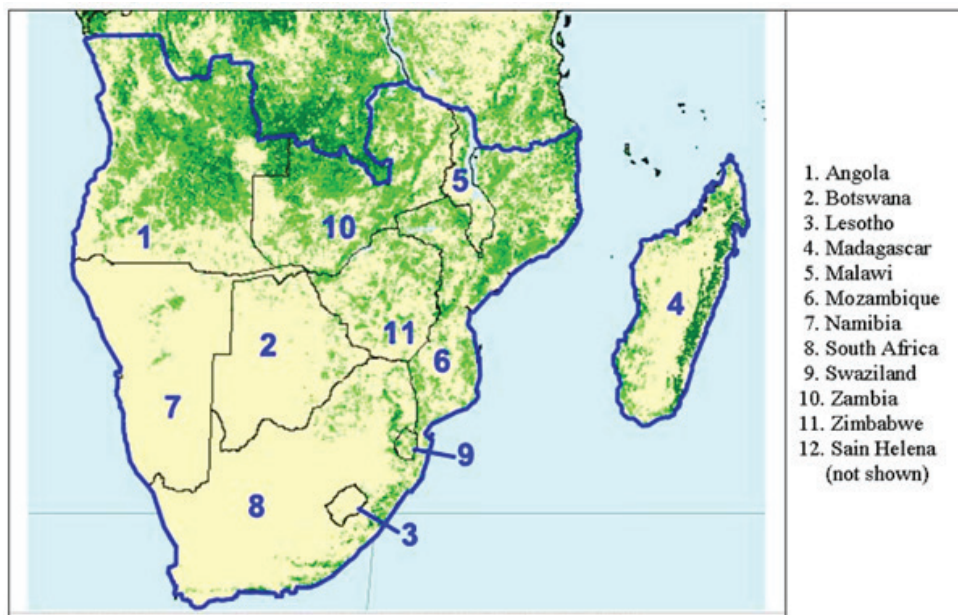
'Climate change exacerbates existing vulnerabilities and inequalities, and that historical, political and economic factors determine societal vulnerability to climate change hazards and risks'.

As with the COVID19 pandemic there are some misunderstandings regarding how inequalities result in exaggerated impacts of climate change-induced disasters. The concept of climate justice provides an appropriate basis for elaborating this connection. Climate justice relates to the idea that the climate crisis has to be looked at through human rights and social justice lenses. This is based on the belief that a better environment can be created by working together. Issues of fairness and equity are critical considering the need to i) protect vulnerable people from the negative impacts of climate change, ii) dampen negative disruptions arising from climate change-induced transformations, and iii) enhance the envisioning and implementing of an equitable post-carbon society (Patterson et al, 2017). The core of this conceptualisation of climate justice globally and with relevance to Southern Africa is captured in a statement made by Mary Robinson that defines climate justice as:

'...a shift from a discourse on greenhouse gases and melting ice caps into a civil rights movement with the people and communities most vulnerable to climate impacts at its heart' (2019)

The geographical area of focus for this study is Southern Africa, with more focus on Mozambique, Zimbabwe and Malawi due to the experiences of Cyclone Idai in 2019. It is a sub-region where the differential impacts of climate change are being felt given the context of racial injustices that created spatially and socially distinct geographies of inequality, which are being exacerbated by climate change. Climate justice is thus gaining momentum as climate change induced disasters like cyclones, droughts and floods increase the structural inequalities in the sub-region. The other countries that this review focused on include Angola, Botswana, Lesotho, Madagascar, Namibia, Saint Helena, South Africa, Swaziland and Zambia (see Figure 1). The total area covered by the sub-region is 6.49 million square kilometres (FAO, 2020) with different climatic conditions.

Figure 1 Southern African countries



Source: FAO (2020)

1.1 Conceptual framework

In framing climate justice in this paper three dimensions of climate change are used (see Box 1). These are causes and effects of as well as responses to climate change. The dimensions are consistent with the UNFCC's operationalisation of climate as "the right to health, the rights of indigenous peoples, local communities, migrants, children, persons with disabilities and people in vulnerable situations and the right to development, as well as gender equality, empowerment of women and intergenerational equity" (UNFCCC, 2015: 2). These dimensions are used to analyse the roles of state, private sector, civil society and ordinary citizens as agents that work together and alone in ways that have a bearing on climate change and the events it triggers. For the state this conceptual framework looks at the presence/absence and scope of national and local policies,

Box 1: Conceptual/Analytical Framework



laws and strategies. These are framed with variable input from different non-state agencies. Private sector operations across different socio-economic sectors have a history of and the potential to cause climate change to endanger natural and socio-economic ecosystems or positively address its impacts and thus contribute to sustainability.

The interest in civil society arises from their potential to further the climate justice agenda. This flows from a realisation that climate change is a social issue. It upsets the lives of different key groups in unequal ways. Further, civil society organisations are usually involved in organising humanitarian and social protection responses. Their appreciation of the causes, effects and responses to climate change has led to considerable climate change activism drawing on perceived state-private sector collusion in doing nothing about planetary health. They are also concerned with ensuring that those with the most responsibility for climate change do the right thing in terms of assisting those most affected, with the least means and the least contributors to the climate crisis (see also Royal Irish Academy 2011)

The analysis engages with different agencies' divergent understandings of climate justice in terms of the three above dimensions. The (mis)understandings of these dimensions are reflected at regional, national and local levels by reflecting on policies, laws and strategies as well as actual practices. It is in this complex and emergent context of addressing climate justice issues that the realities of COVID-19 are also understood. This is meant to further relevant debate and to draw lessons for post-COVID resilience building in an era of climate change (World Economic Forum, 2020) as well as capacities. Table 1 shows the dimensions of climate justice that are used in the paper to discuss the extent to which exists in Southern African. Table 1 elaborates each of the dimensions.

Table 1: Summary of the Climate Justice Dimensions

Dimension	Description/Focus
Procedural	Participatoriness of decision-making regarding the tackling of climate change impacts; Sources and use of evidence on causes; Concerns with fairness, accountability and transparency of actions
Distributive	Clarity and justifiability of burden/cost bearing (human life, livelihoods etc.); Response type, design and beneficiary; Implementation arrangements and targeting;
Recognition	Noting losers/gainers by socio-economic, demographic, sectoral and locational (e.g. rural, peri-urban and urban) dimensions
Intergenerational	Appraising actions/inactions (responses) regarding current and future burdens and those to bear them

Source: cf Newell et al (2020); Sovacool and Scarpaci (2016); Brundtland Commission (1987)

2. Southern Africa's Climate, Climate-Induced Events and their Impacts

2.1 Characteristics of the region's climate, climate change and related disasters

Southern Africa has a varied climate. The range is from arid to humid subtropical conditions. Largescale seasonal atmospheric patterns, complex regional topography, migration of the Inter-tropical Convergence Zone (ITCZ) and the influence of the Indian and Atlantic Oceans largely lead to these variances (Godfrey and Tunhuma, 2020). Temperature and rainfall variations are considerably significant. Rainfall variations are due to ocean currents and prevailing winds. Madagascar receives the highest rainfall, up to 3,100 mm while the highest summer temperatures exceeding 40°C are recorded in the Kalahari Desert of Namibia and Botswana as well as Mozambique's coastal regions (Godfrey and Tunhuma, 2020). The region thus experiences extreme weather events, which point to climate change. The Table below shows the major cyclones that have hit the sub-region, when they occurred and their direct impacts. The frequency of the cyclones has increased since 2000. For instance, the region was hit by three cyclones between 2017 and 2019 while Mozambique additionally suffered from tropical storm Desmond in 2019 and a debt crisis in 2016 (ACB 2020).

Table 2 Cyclones in Southern Africa and their impacts, 2000-2020

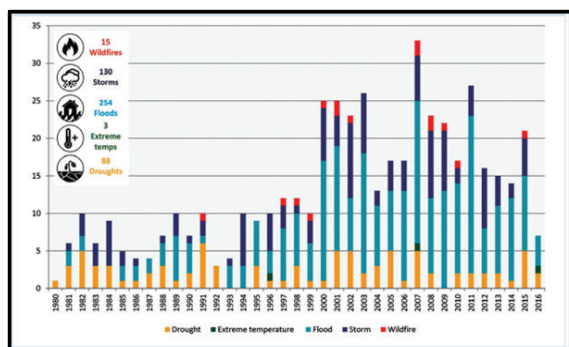
Cyclone	Year	Estimated Direct Impacts	Countries affected
Eline	2000	205 deaths Over 10,000 people were left homeless.	Mozambique, Zimbabwe, Madagascar, Botswana and South Africa.
Hudar	2000	3 people died Strong winds damaged roofs & downed trees	Mozambique, Malawi and Zimbabwe
Japhet	2003	More than 50,000 people affected 237,000 hectares of crop fields destroyed Destruction of bridges and infrastructure	Zimbabwe and Mozambique
Favio	2007	10 people died More than 70 people injured	Mozambique and Zimbabwe
Jokwe	2008	More than 10,000 houses destroyed Widespread energy cuts & crop damages	Mozambique
Dineo	2017	Estimated 20,000 homes were destroyed Approximately 130,000 people directly affected Flooding occurred in many parts of region	Zimbabwe, Mozambique, Botswana, South Africa, and Malawi

Idai	2019	Up to 3 million people affected & more than 1,000 deaths Nearly a million hectares of cropped land & many settlements destroyed Billions in infrastructure damage, economic losses, land degradation & flooding Food & Nutrition insecurity especially among children	Mozambique; Malawi and Zimbabwe
Kenneth (6 weeks after Idai)	2019		Mozambique, the Comoros and Malawi

Sources: Chanza et al. (2020); OCHA (2019); ReliefWeb (2019); Brown et al. (2012); World Resource Institute (2019); Reason and Keibel (2004), Chatiza (2019), Manatsa and Chatiza (2020), World Bank et al (2019), African Centre for Biodiversity (2020).

As shown in the above Table Mozambique was affected by all eight cyclones as most of them originate in the South and South West Indian Ocean and pass through the Mozambican Channel. Zimbabwe was hit by six while Malawi was affected by four of the cyclones. As such, these appear to be the countries most affected by tropical cyclones in Southern Africa. Mozambique experiences the most damage as the energy and intensity of the cyclones will still be very high. Besides cyclones the range of extreme weather events is increasing in Southern Africa. The Figure below shows that the frequency of these events affecting the region has been increasing.

Figure 2: Frequency of extreme weather events, Southern Africa (1980 to 2016)



Source: Davis-Reddy and Vincent (2017)

The adverse impacts of climate change are manifesting in Africa as evidenced by rainfall variability and extreme events such as heat waves, floods and droughts (African Development Bank, 2012;

Brown et al., 2012; Davis-Reddy and Vincent, 2017; Institute of Security Studies, 2018; World Resource Institute, 2019). In the last 100 years, temperatures have risen by 0.5°C (Shepard, 2019). It is expected that temperatures in Southern Africa will rise faster at 2° C with areas of the southwestern region, especially in South Africa and parts of Namibia and Botswana expected to experience the greatest increases in temperature (Institute of Security Studies, 2018; World Resource Institute, 2019).

Rainfall patterns are also projected to decrease by about 20% and this will trigger increases in the number of consecutive dry days in Namibia, Botswana, northern Zimbabwe and southern Zambia (Shepard, 2019). The negative impacts already being experienced by communities in Southern Africa include water stress, food insecurity, decreased yields from rain-fed agriculture, and an increase in arid and semi-arid land (Brown et al., 2012; World Resource Institute, 2019; TRALAC, 2020). The Table below shows that different types of extreme weather-related events have caused damages amount to USD6.4 billion excluding the events after 2016, which were more damaging. Taken into account the cost would easily surpass USD10 billion and this excludes losses in lives, which are difficult quantify.

Table 3: Historical data on impact of disaster events, Southern African (2000–2016)

Disaster (2000–2016)	Frequency	Total deaths	Injured	Affected	Homeless	Total affected	Total damage (USD)
Drought	46	576	0	73,842,258	0	73,842,258	2,108,000,000
Earthquake	15	66	763	169,286	26,395	196,444	515,000,000
Epidemic	161	21,101	27,476	1,310,874	0	1,338,350	0
Extreme weather	2	33	20	0	0	20	0
Flood	198	3,974	2,666	15,721,948	417,745	16,142,359	2,424,204,000
Insect infestation	2	0	0	2,300,000	0	2,300,000	0
Landslides	6	104	7	0	1,460	1,467	0
Storms	87	1,746	7,005	4,540,611	850,296	5,397,912	858,722,000
Volcanic activity	2	200	400	0	110,000	110,400	9,000,000
Wildfire	11	156	548	59,503	8,745	68,796	440,000,000
Total	530	27,956	38,885	97,944,480	1,414,641	99,398,006	6,354,926,000

Source: IOM (2017).

2.2 Climate induced disasters in Zimbabwe, Mozambique and Malawi

As observed above in recent years, Zimbabwe, Malawi and Mozambique have experienced an increase in floods, cyclones, (see Table 2), droughts and other severe and irregular climate change-induced disasters. These have had a devastating impact on the economies and societies of the three countries. Of these three Mozambique is the most frequently affected. At 6.0 the country is ranked in the top three countries in Southern Africa on the INFORM Global Risk Index while Zimbabwe is at 4.9 and Malawi at 4.8 (IOM, 2017) . These rankings are based on hazard and exposure, vulnerability and coping capacity (ibid). Clear from analyses following Cyclone Idai is that a number of shocks due to the climate crisis and ecological degradation sit side-by-side with political and economic governance crises these three countries and others in the region have been experiencing (ACB 2020, Manatsa and Chatiza 2020, Chatiza 2019). These fault lines have been further exposed by COVID19 (ACB 2020).

The losses that visit populations in the three countries relate to crops and livestock, homes and fields, common pool resources and infrastructure (Chatiza 2019; World Bank et al 2019). The weather events cripple the productivity of many farmers (Brown et al., 2012; Davis-Reddy and Vincent, 2017; IOM, 2017; UN-ECA, 2016). Mozambique, Malawi and Zimbabwe are some of Southern Africa's playgrounds of the interplay pitting what ACB (2020:6) notes as follows:

'climate change, deforestation, agriculture and extractivism [that are] driving social and political instability and food insecurity'

The impacts of climate related disasters increase community vulnerability because of the population's heavy reliance on agricultural production and ecosystems (TRALAC, 2020; Chanza et al, 2020; Chatiza, 2019). As observed by ACB (2020) those affected by the disasters have little time to recover before other disasters strike largely because the social and political crises in their societies remain unresolved (Manatsa and Chatiza 2020; Chatiza 2019; Chatiza et al 2020). This has been the case with victims of Cyclones Idai and Kenneth who have had to deal with COVID19 while yet to rebuild their lives with some still in temporary shelters (ACB 2020; Manatsa and Chatiza 2020). Table 4 shows the impacts of disasters on Malawi, Mozambique and Zimbabwe over the 2000 to 2016 period.

Table 4: Climate related disasters in Mozambique, Malawi and Zimbabwe, (2000 to 2016)

Hazard type	People affected in Malawi	People affected in Mozambique	People affected in Zimbabwe
Drought	16,849,435	5,699,500	16,067,618
Earthquake	20,736	1,476	---
Flood	2,090,992	6,806,603	344,022
Storm	6,358	528,275	475

Source: adapted from IOM (2017)

Cyclones Idai and Kenneth are the recent disasters that hit Southern Africa. They occurred six weeks apart compounding the devastation. That two cyclones occurred in one season was also unprecedented (UNICEF 2019). Cyclone Idai was the deadliest cyclone (category 4 and 5) and most widespread in terms of areas affected. It left a trail of destruction in the three countries (OCHA, 2019; ReliefWeb, 2019; Manatsa and Chatiza; Chatiza, 2019). The United Nations estimated that Cyclone Idai destroyed more than USD773 million in buildings, infrastructure, and crops (United Nations, 2019; World Vision, 2019). It also brought range of public health challenges (water and vector borne diseases) like cholera, malaria and measles (Mongo et al, 2020). Thousands of people were displaced, many homes, roads and bridges destroyed (World Health Organisation, 2019; World Bank, 2020). Millions were affected in the three countries (World Health Organisation, 2019).

Low-lying settlements like Beira City and parts of Tete, Manica and Sofala Provinces in Mozambique were flooded and inaccessible for weeks while in Zimbabwe Chimanimani District experienced considerable landslides and infrastructure that are made some areas inaccessible for months (ACB 2020; Chatiza 2019; Manatsa and Chatiza 2020). Areas most affected in Malawi were the Nsanje and Phalombe districts (United Nations News, 2019). The Cyclone Idai disaster was acknowledged as a wakeup call for countries to prioritise strengthening the country's early warning systems (United Nations News, 2019; Chatiza, 2019, Chanza et al., 2019; World Health Organisation, 2019). All three countries did not receive adequate international support to respond to the disasters.

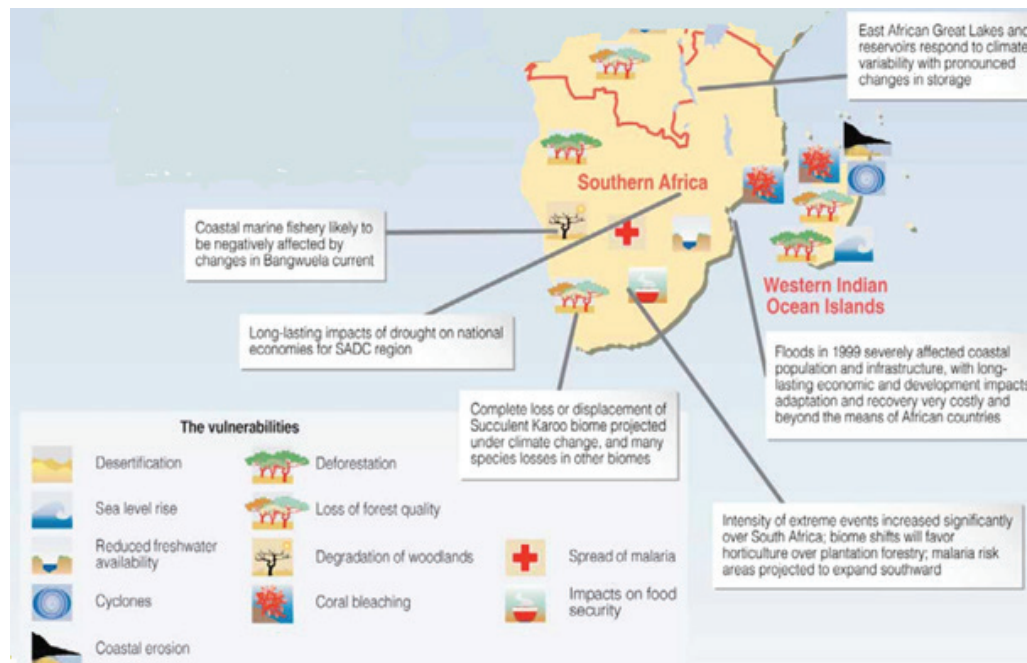
ACB (2020) observes that Mozambique received less than a third of what it needed for purposes of coping with the disaster and recovering from it while Zimbabwe got less than a fifth and Malawi less than half. In essence, climate justice considerations were not met in the most recent climate change induced disaster despite the three countries being amongst the least responsible for the climate crisis. Further, in Zimbabwe Chatiza (2019) observed that institutional development support was weak and responses to the emergency by international agencies circumvented local and national governments. In many respects this undermined and did not prioritise state capacity development

(ibid; Chatiza et al 2020; ACB 2020). A just and decolonised socio-ecological system is needed as ACB (2020) observes. This can only be built on broadened disaster management approach where the rights and competences of local institutions are prioritised. In the sections below this point is further developed.

2.3 Other impacts experienced in the three countries and elsewhere

Southern African countries are experiencing desertification, deforestation and loss of forest quality, sea level rise, reduced availability of freshwater and woodland degradation (Royal Irish Academy 2011). Others including coastal erosion, coral bleaching and other climate change induced problems (ibid). The Figure below shows some of the areas where these challenges are being experienced. The challenges trigger livelihood losses and other consequences that are discussed in this paper.

Figure 3: Climate change impacts in Southern Africa



Source: Royal Irish Academy (2011:5)

2.3.1 Climate change, food and nutrition insecurity

Besides actual disruptions to food systems and production activities arising from specific weather events, increasing droughts are affecting an estimated 11 million people in nine Southern African countries. These are now experiencing food insecurity due to drought (Maher and Baskaran, 2020). Between 2001 and 2002 Southern Africa faced a food deficit to the tune of 1.2 million tonnes of cereal and non-food requirements estimated at USD611 million (Kandji et al, 2006). This food deficit was a result of severe dry spells/drought in Malawi, Mozambique, Zambia and Zimbabwe as well as heavy rains and floods in Lesotho and Mozambique. Disruptions to commercial farming in Zimbabwe, depletion of strategic grain reserves in Malawi and Zambia, poor economic performance in Lesotho and Zimbabwe compounded the situation and saw sharp rises in food prices (ibid). In Lesotho for instance the government declared a national disaster as a result of the drought which left a fourth of its population facing severe food insecurity (Maher and Baskaran, 2020).

The 2015 and 2016 El Nino weather phenomenon also caused intense drought in Southern Africa. It left some 15.6 million people in need of food (Godfrey and Tunhuma, 2020). Shortages were experienced in Eswatini, Lesotho, Madagascar, Malawi, Mozambique and Zimbabwe. In subtropical Southern Africa, Godfrey and Tunhuma (2020) project a rise in factors that contribute to aridity. Desertification is expected to increase in parts of Angola, Botswana, Mozambique and South Africa negatively affecting food production (rain fed agriculture). Affected communities are expected to adopt innovative agricultural practices which are adaptive to climate change (Kandji et al 2006). This has economic implications for the poor and marginalised who will need government support.

These experiences of food insecurity due to climate change are projected to continue and potentially increase. It is worrying that resilience building (i.e. post-disaster recovery and development) is yet to be fully mainstreamed into national programs (UNDP, 2015; Hoag, 2019). Drought response strategies remain humanitarian in nature. That climate change is stressing the food security situations of specific communities is now increasingly clear. There are many communities experiencing distress attributed to climate change in a context of injustice and inequality.

The example of Lesotho is instructive. The country has a large rural population dependent on rainfed agriculture (Hoag, 2019). Climate vulnerability is behind the continued fragility and substantial degradation of soils in a context of high human and livestock population pressure on the available land resources. Only 1% of crops are produced under irrigation. Efforts at agroforestry, household water harvesting, the use of drought-tolerant crop varieties, increased production of poultry and pigs, and the building of shelters for livestock are still low (FAO 2011). Considerably inadequate rural social, economic and physical infrastructure curtails people's ability to deal with severe weather

conditions. As a result, Lesotho faces high levels of food insecurity and poverty (UNDP, 2015; FAO, 2011).

The southern lowlands and mountains of Lesotho are the most climate change vulnerable livelihood zones. Rainfall is suboptimal in terms of spatial and temporal distribution resulting in recurring droughts (Wikle, 2015). Water supplies are more problematic in the mountains than in the lowlands. During spring droughts, livestock have to be driven down to larger rivers when rivers near to the settlements dry up. This makes these areas some of the most vulnerable in Lesotho.

The disproportional effects of climate change in terms of security also has gender dimensions. Botswana's eastern areas like Bobirwa District reflect this challenge clearly. The area is characterised by variable and often extreme weather conditions i.e. low rainfall, high temperatures, and frequent droughts (ASSAR, 2018; Mugari et al 2020). The livelihoods of people in the district revolve around use of natural resources and primary production making the people vulnerable to climate change effects (Rao et al., 2019). Rainfed agriculture, livestock rearing and harvesting of Mopane worms (ASSAR, 2018) are being severely undermined by climate variability in a context of poverty, inequality and HIV and AIDS (ASSAR, 2018). Women in Bobirwa have the additional burden of unpaid care work associated with community-based HIV and AIDS responses.

Women are facing challenges in connection with water availability for household use, wild vegetables and resources for basket making and firewood for domestic use (Mugari et al, 2020). On the other hand, men are facing challenges in connection with availability of timber, pasture and water for livestock. Historically, people residing in these areas have been thriving on various adaptive mechanisms that were influenced by the seasonal climate forecasts basing on customs, values and belief systems (Rao et al., 2019). However, these areas are limited in terms of adaptive measures mainly due to marginalisation, underdevelopment, poverty, inequality, weak governance and rising populations (ASSAR, 2018). This increases their vulnerability to effects of climate change.

2.3.2 Climate change, displacement and migration

Local to regional migration can be viewed as a climate change adaptation strategy. When it is planned and coordinated it can result in positive life outcomes (Mpandeli et al, 2020). Increasing socio-economic and environmental changes, together with the frequency and intensity of extreme weather events are responsible for displacements and migration. Within localities, movements include the bringing of marginal lands into production and at times this results in land conflicts as well as unsustainable use of wetlands. Seasonal crop failures associated with recurrence of droughts have seen some subsistence farmers abandoning their land and migrating into urban areas to

seek alternative livelihoods (Lesolle, 2011). The drivers of migration in Southern Africa include crop failure as well as actual displacements when disasters like cyclones occur (Mpandeli et al, 2020). Climate change-related drivers of migration are in a context of other drivers like political and socio-economic challenges (ibid). Political and socio-economic factors leading to migration relate to inadequate social services and political representation or rights (Rigaud et al, 2018; Faye, Ribot and Turner, 2019; de Sherbinin and Rigaud, 2019).

Over time some 86 million residents of the region have been internally displaced within their countries as well as within the region due to cyclones, droughts, lack of economic opportunities and other factors (Chanza et al., 2020; OCHA, 2019; Godfrey and Tunhuma 2020). In 2009 and 2010, Botswana experienced floods that displaced over 4,000 inhabitants as their mud dwellings collapsed in the heavy rains (World Bank, 2010). The heavy rains that fell in June, a traditionally dry month flooded parts of Serowe, Kweneng, Tutume, Boteti, North West, Mahalapye and Bobirwa (World Bank, 2010).

Climate change is thus imposing additional stress on already vulnerable people. This stress forces people to migrate looking for better opportunities. It thus adds complexity to decision-making regarding whether one stays or leaves their home (Rigaud et al, 2018). In this sense climate change is not a direct but an indirect driver of migration (Faye, Ribot and Turner, 2019). This is because it affects overarching variables like the economy, environment and political systems. Also, those lacking public services and social safety nets are more vulnerable to climate change (de Sherbinin and Rigaud, 2019). This brings forth the issue of local and national governance. With most countries' disaster response and development efforts largely dependent on external donors and state capacity low, the interplay of climate change, socio-economic development and governance remains unsustainable.

2.3.3 Climate change and water resource stress

Climate change affects the availability and quality of water resources. Changes in rainfall and evaporation patterns are impacting overall hydrological and ecosystem stability. This is adding to an already unreliable Southern African water resource situation. Access to water is predicted to become more challenging as climate change effects are felt (Mpandeli et al, 2020). The Limpopo River Basin is one of the stressed basins (Nhantumbo, 2013; Awojobi and Tetteh, 2017; Ziervogel 2018). It is a source of irrigation water for the basin countries (Botswana, Mozambique, South Africa & Zimbabwe).

Elsewhere, water resources such as lake Kariba Dam which supplies water to Zimbabwe and Zambia, sometimes reach critical levels of about 16% (Relief Web, 2019). This leads to reduction

in or complete suspension of power generation with negative socio-economic consequences. Communities in drought-affected areas are facing water challenges as water points dry up and fail to meet minimum water demands (Mpandeli et al, 2020). This results in water insecurity, depletion of water sources for domestic use, livestock and crop watering (see Relief Web, 2019; Ziervogel 2018). Urban water crises are also being experienced resulting from a combination of climate change, low technical and political capacity as well as infrastructure investment. The most widely reported case recently is the City of Cape Town, which experienced a crisis in 2017 following three straight years of droughts (Ziervogel 2018). Other urban areas in the region are also experiencing water stress to varying degrees. In recognition of this reality SADC has a Water Sector Adaptation Strategy of 2011 focused on infrastructure development, water management and governance measures suited to the climate change era (ibid)

2.3.4 Public health and climate change

Events that can potentially affect human health adversely with the added risk of spreading within and across borders are public health threats (Bickton 2016; Young and Tucker 2011). Climate change is contributing to public health threats since it 'affects the fundamental requirements for health [which are] safe drinking water, clean air, sufficient food and secure shelter [causing] many direct and indirect adverse health impacts' (Young and Tucker 2011:817). As such, heat waves, floods, droughts and other extreme weather events that are being experienced in Southern Africa (Busby et al, 2014) directly affect the availability, quality and safety of key health enablers like shelter, water and sanitation including the social and physical infrastructure delivering them.

Inland flash and coastal floods have been a growing and frequent threat (Godfrey and Tunhuma, 2020; Tirivangasi, 2018; Nema-konde et al., 2020) with public health implications. They result in a rising disease burden (Gage et al, 2008) and deaths (Chatiza 2019). The World Health Organization (WHO) noted that climate change has already caused 160 000 deaths and 5.5 million disability-adjusted life-years through malaria, malnutrition, diarrheal diseases, heat waves and floods (Semenza and Suk, 2018).

During flooding for example, one of the major concerns is the spread of diseases. Cholera, dengue fever and dysentery are diseases associated with ponding of water in rural or peri-urban settlements without adequate sanitation or drainage (Bouchard et al., 2019). National and regional expansion of malaria-prone areas where people live is a real concern (Ziervogel 2018). Related are post-disaster mental health issues including stress and gender-based violence (see Manatsa and Chatiza 2020)

2.4 Summary of climate change impacts in Southern Africa

This section of the paper has discussed the different impacts of climate change in Southern Africa. It has been shown that the connection between climate change and the extreme weather events witnessed is now established. The connection with public health, livelihood security and overall development was also made. At the same time the systemic socio-economic and political weaknesses were discussed in that these form the context of extensive population vulnerability in specific geographies within the region. A considerable lack of disaster preparedness was also discussed.

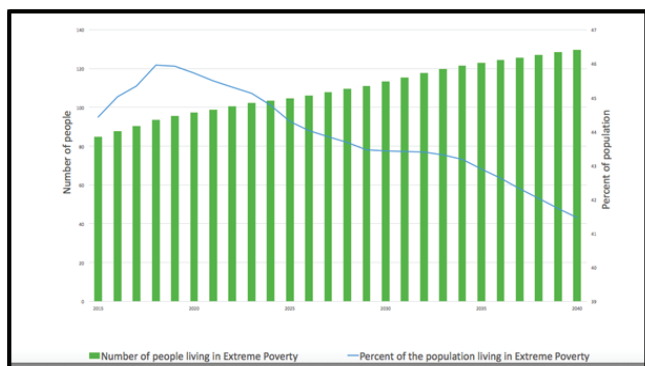
This is seen in what UNECA (2020) regards as low levels of investment in climate and weather observation infrastructure. Views on inadequate systems for delivering basic services and the effects of such lack of capacity on mobility and sustainable livelihoods were also highlighted. This reflects the dearth of capacity necessary for driving informed responses to climate change. Southern Africa's preparedness therefore needs attention at different levels not least the community. This strains realisation of climate justice within the region and in terms of the region's relationship with the world.

3. Climate Justice in Southern Africa: Context, Performance and Institutions

3.1 Poverty, inequality, racism, colonialism and climate change

There are social, environmental and economic costs associated with climate change and responses to it. Southern Africa's status as one of the most vulnerable regions in the world and the limits imposed by a weak coping capacity is established (Brown et al., 2012; Ziervogel 2018; Manatsa and Chatiza 2020; Chatiza 2019). A key contextual issue for climate justice is poverty. Approximately 45% of the population in Southern Africa live on less than USD1 per day (USAID, 2015; see also ISS 2020). Most Southern Africans live in rural areas and pre-dominantly rely on agriculture, which are susceptible sectors to be hit by climate induced variations (Nyiwul, 2020; TRALAC, 2020) with some estimates putting the proportion at 70% (Ziervogel 2018). Coastal areas, settlements in low-lying areas, informal settlements and desert areas are inhabited by some of the poorer residents of the region. These areas particularly receive inadequate services and state capacities to boost resilience are weak (Institute of Security Studies, 2018; UNDP, 2020; Rawlins and Kalaba, 2020). The figure below shows regional poverty trends that have implications for addressing climate justice deficits. While the percentage of people living in extreme poverty is projected to slow the absolute numbers are set to rise. The critical concern is that the rise is likely to be in the same previously deprived or underserved geographical areas where most people lack basic services like water, sanitation and health, among others.

Figure 4: Extreme Poverty Forecast, Southern Africa 2015-2040



Source: ISS (2020)

The structural reasons for poverty and inequality in Southern Africa are traceable to colonial, post-colonial separate development, extractivism and weak states. As such, climate justice debates need to engage with issues of inequality, racism and colonialism (Asongu and Odhiambo, 2020). In Southern Africa, climate change drivers went unchecked when the region experienced state-based or institutionalised racism under colonialism. The racist governance models increased most indigenous populations' exposure to poverty and vulnerability as they lived in locations with weak coping strategies (Dasgupta et al 2020; Nyiwul, 2020; Machaka, 2020). Health, gender and social inequality issues specifically in terms of access to public assets and participation as measured by the Gini coefficient were hatched during this period. Inequality is highest in Lesotho (0.632) followed by South Africa (0.625), Botswana (0.605), Namibia (0.597) and Zambia (0.575) (Asongu and Odhiambo, 2020).

South Africa's long history of segregation and discrimination played the biggest part in the inequalities being experienced today (Dasgupta et al 2020; Machaka, 2020). Since independence efforts were made by governments to improve social services in previously neglected areas (Open Society Initiative for Southern Africa, 2011). However, these efforts are inadequate to systematically transform socio-economic structures. The typical African enclave economy has thus persisted (Dasgupta et al 2020; Nyiwul, 2020). Differences in the burden of climate change in Southern Africa are linked to inequalities that date back to the colonial era (ibid). There is consensus on the climate change – inequality nexus (Dasgupta et al, 2020; Nyiwul, 2020). The pattern has also been visible in terms of COVID-19. When considering the challenges brought about by COVID-19 and climate change, countries with high inequalities thus face combined challenges (Machaka, 2020; cf Ruiters, 2001; Islam and Winkel, 2017).

3.2 Global (Agenda 2030) and continental (Agenda 2063) and Climate Justice

Southern African countries are guided by Africa's Agenda 2063 and Agenda 2030 for Sustainable Development Goals, SDGs (Mo Ibrahim Foundation 2019; 2020). The visions overlap on issues of inclusive societies, social protection, accountable institutions, justice and environmental sustainability (DeGhetto et al 2016). SDGs are clear on climate change and inequality issues. They place an emphasis on moving from donor dependence to government ownership particularly of SDG localisation in multi-layered processes. On the other hand, democratisation is a clear Agenda 2063 focus alongside cultural identity, regional integration and domestication of critical continental instruments (Mo Ibrahim Foundation 2019). These frameworks align with climate justice principles.

The agendas' climate justice relevance is clear with respect to SDG 1.3 for instance, which focuses on the implementation of social protection systems and measures at national level. This emphasises

supporting the poor and the vulnerable (Gowreesunkar, 2019). Agenda 2063 targets provision of social protection to at least 30% of vulnerable populations. These include persons with disability, older persons and children (UN Women, 2017). The goals and targets resonate with climate justice in Southern Africa (Nhamo, 2017). As such, use of the concept of inclusive societies implies that all people are factored into regional and continental affairs. As a social justice issue climate justice surfaces issues of equality and fairness. Agendas 2063 and 2030 thus speak to climate justice (Oguntuase, 2020).

Southern African countries recognise the need for climate change mitigation and adaptation. Most work with the global community to address the climate crisis. All Southern African countries have ratified the 197-party United Nations Framework Convention on Climate Change, UNFCCC of 9 May 1992 (SADC, 2010). It is anchored on stabilising greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system. Botswana, Lesotho, Malawi, Mozambique, Namibia, South Africa and Zambia have also ratified the 192-party Kyoto Protocol, which was adopted in 1997 and became operative in February 2005 (UNFCCC, 2020). The protocol encourages and commits industrialised countries to reduce greenhouse gas emissions in accordance with agreed individual targets.

The 195 party Paris Agreement signed in 2015 and effective from 5th October 2016 is also a key compact with which Africa identifies and a number of countries have ratified. As of April 2017, some 33 African countries had ratified with many fulfilling key requirements particularly formulating Nationally Determined Contributions (NDCs) that prioritising climate-proofing their development activities especially the agriculture and energy sectors (UN 2020).

Some South African cities are part of the C40 Cities network, a network of megacities committed to addressing climate change. South Africa is the only country in Southern Africa that has cities that are part of the C40 cities. The cities that are part of the C40 are Cape Town, Durban, Johannesburg, Ekurhuleni and Tshwane (Westermann et al., 2018). C40 cities are taking bold climate action, leading the way towards a healthier and more sustainable future (IIED, 2013; Madziwa and Betzold, 2014). The network focuses on tackling climate change by driving urban actions that reduce greenhouse gas emissions and climate risks, while increasing the health, wellbeing and economic opportunities of urban citizens (Madziwa and Betzold, 2014).

3.2.1 Governance performance and climate change

Alignment with global and continental objectives, while critical is inadequate for climate and social justice without governance effectiveness. This is because governance involves:

'...the provision of the political, social and economic public goods and services that every citizen has the right to expect from their state, and that a state has the responsibility to deliver to its citizens" (Mo Ibrahim Foundation, 2019: 17).

Governance performance is thus indicative of a country's readiness to provide social protection services to its citizens in the wake of climate change and other emergencies including COVID-19. Having noted that the most vulnerable communities are the hardest hit by climate change it therefore follows that low governance scores increase the risk that citizens of such jurisdictions are exposed to public health and climate change induced disasters. This forces communities to rely on individual resilience competences, which are often inadequate.

In Southern Africa, Botswana and South Africa are the top-scoring countries in terms of overall governance (Mo Ibrahim Foundation 2019), but have been on a concerning downward path since 2015. Angola and Swaziland are at the bottom of the ranking, though they are on a steady path of improvement since 2010. The Mo Ibrahim Foundation (2020) acknowledged that the COVID-19 pandemic has worsened governance issues in Southern Africa especially on issues of shrinking space for civil society, increased repression and political unrest. The Table below shows overall performance of the countries over a ten-year period.

Table 5: Overall governance index in Southern African countries

Rank No. & country		2019 SCORE/100.0	CHANGE 2010-2019
1	Botswana	66.9	+0.8
2	South Africa	65.8	-0.9
3	Namibia	65.1	+3.4
4	Lesotho	52.3	-0.5
5	Zambia	52.0	-0.8
6	Malawi	51.5	-1.3
7	Mozambique	49.0	-0.2
8	Zimbabwe	46.1	+7.4
9	Madagascar	44.4	+1.7
10	Swaziland	43.8	+2.5
11	Angola	40.0	+5.4

Source: Mo Ibrahim Foundation (2020)

Good governance performance is important as countries recover from the effects of climate

change and COVID-19 within the country ownership framework that Agenda 2030 promotes. The importance of good governance is also underscored by the United Cities and Local Governments (2020), which notes that it helps communities recover from COVID-19. Evidence suggests that macroeconomic insurance, such as climate funds and state-contingent bonds, have been difficult for the region to access so far, given large risk premiums. These partly reflect governance issues in much of the region (TRALAC, 2020). Clearly therefore, weak governance indicators have ramifications for states' capacity to address the twin challenges of climate change and COVID-19.

3.2.2 Greenhouse gas emissions

The variations in socio-economic conditions across Southern Africa are also reflected in the country-related share of greenhouse emissions as well as between Southern Africa and other regions. The Tables below shows the GHG state of play as of 2011 and also for the 2011 to 2016 period. The data presented in the Tables below show that South Africa has the highest greenhouse gas emissions. This is because South Africa has an advanced industrial sector (African Development Bank, 2019). Angola is the second largest greenhouse gas emitter in Southern Africa with Zambia in third position.

Overall, Southern Africa's contribution to global greenhouse gas emissions is merely 2.19% (WRI, 2020). Yet, socio-economically, the region is considered one of the poorest and most vulnerable to climate change. At global level therefore this represents climate injustice (Awojobi and Tetteh, 2017). Countries like Zimbabwe, Mozambique, Zambia, and Malawi bear the most brunt (OCHA, 2016). Rich countries contribute more to climate change than poor countries yet the least contributors to the problem bear the greatest cost of climate change (ACB 2020). This is a dimension of climate injustice that can also be applied at regional and country levels. The heterogeneity is also in terms of socio-economic factors at country, regional and global levels as shown in below.

Table 6: Greenhouse gas emissions in Southern Africa as of 2011

Country	Total GHG Emissions (MtCO ₂ e) ²	% of global emissions	Population (000's)	tCO ₂ e per capita	GDP (Billion US\$) ³	tCO ₂ e/ million US\$ GDP	Change in GHG emissions (1990–2011) (MtCO ₂ e)
Angola	206	0.44%	20,180	10.22	\$52	3,941	+101 (+96%)
Botswana	34	0.07%	1,987	16.89	\$13	2,608	+11 (+50%)
Lesotho	2	0.00%	2,030	1.08	\$2	1,221	+0.3 (+19%)
Madagascar	57	0.12%	21,679	2.65	\$6	9,769	-3 (-6%)
Malawi	15	0.03%	15,458	0.98	\$4	3,744	-1 (-6%)
Mozambique	56	0.12%	24,581	2.28	\$10	5,767	+1 (+2%)

Namibia	22	0.05%	2,218	10.06	\$10	2,345	+7 (+46%)
Seychelles	1	0.00%	87	7.58	\$1	541	+0.5 (+285%)
South Africa	447	0.95%	51,553	8.67	\$310	1,442	+125 (+39%)
Swaziland	3	0.01%	1,212	2.40	\$3	1,004	-0.1 (-4%)
Zambia	120	0.26%	13,634	8.82	\$13	8,943	+4 (+3%)
Zimbabwe	64	0.14%	13,359	4.77	\$6	10,938	-7 (-10%)
Regional Total	1,027	2.19%	167,978	6.12 (weighted average)	\$429	2,392 (weighted average)	+239 (+30%)
World	46,906	100%	6,964,618	6.73	\$54,034	868	+12,969 (+38%)

Source: USAID (2015)

Table 7: Greenhouse Gas Emissions MtCO₂e between 2011 and 2016

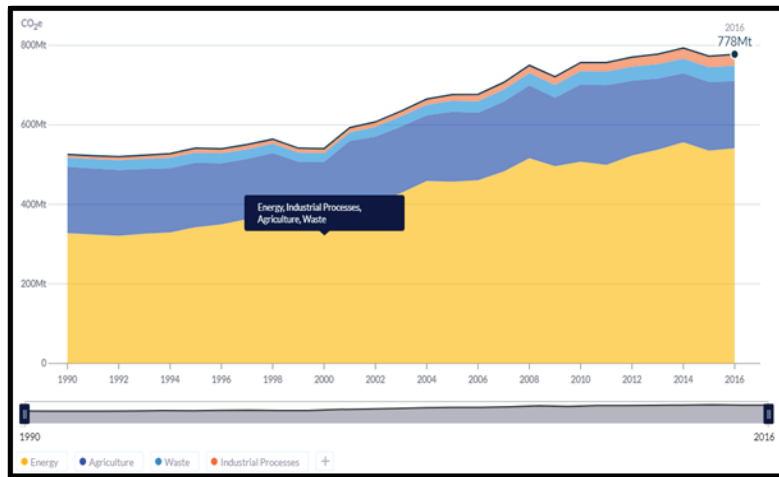
Country	2011	2013	2014	2015	2016
Angola	88.06	89.66	89.6	95.51	90.87
Botswana	26.72	15.98	15.69	14.81	14.48
Eswatini	2.95	3.06	3.19	3.03	3.06
Lesotho	5.02	5.43	5.54	3.88	3.87
Madagascar	30.01	29.88	30.06	30.69	32.1
Malawi	11.84	13.98	15.09	15.49	16.18
Mozambique	31.43	33.3	35.24	35.53	36.1
Namibia	13.47	12.89	12.3	12.48	12.34
Seychelles	0.56	0.53	0.63	1.28	1.3
South Africa	486.02	502.49	516.59	419.9	496.33
Zambia	33.97	39.13	39.52	41.04	41.06
Zimbabwe	28.73	31.44	29.99	31.24	29.84
Regional Total	758.78	777.77	793.44	704.88	777.53

Source: WRI (2020)

The energy sector accounts for much of the GHG emissions in Southern Africa (see Figure below) followed by agriculture. This is because the energy sector is largely coal-based in countries like South Africa, Zimbabwe and Angola (Godfrey and Tunhuma, 2020). Although energy is the region's highest GHG emitting sector, it is the leading source of emissions in only two countries, South Africa and Angola (Lo, 2020). The energy emissions of these two countries combined account for 91% of

the region's energy sector emissions (USAID, 2015). South Africa's energy emissions are more than triple those of Angola and are due to electricity and heat production accounting for 61% of energy emissions.

Figure 5: GHG Emissions by sector between 1990 and 2016



Source: WRI (2020)

3.3 Climate change institutions

Regional consolidation of climate change instruments in Southern Africa is in its infancy. As a result there is some fragmentation in terms of existing protocols, policies and initiatives across sectors at national and regional levels. A holistic framework prioritising climate change adaptation in the region is still lagging (Carroll and Satgar, 2020). While local opportunities to adapt appropriate measures exist in different countries have created room for participation including of the private sector and CSOs (Kamara, et al, 2018; IISD, 2013, 2020; Krishnan, 2020) a critical mass of actions remains outstanding.

Resilience building actions to withstand climate change impacts are evident. Examples include five-year disaster risk reduction planning cycles from 2001, a SADC Policy Paper on Climate Change and social protection policies that are linked to disaster risk reduction (IOM, 2017). The region has also working on strengthening hazard, vulnerability and capacity analyses, information management and early warning systems. However, a key challenge is lack of a clear resource

mobilisation strategy, which has seen the region relying on external funding (UNECA, 2017). This resource handicap has stalled the cascading of regional policies to local levels. A key area relates to inadequate mainstreaming of disaster risk reduction across key sectors, which remains low in Southern Africa. Sectors such as health and education rarely prioritise disaster risk management in their work.

The SADC Policy Paper on Climate Change provides a summary of the impacts of climate change in the region. It highlights the need for a coordinated climate change mitigation and adaptation policy to guide countries. Key recommendations include i) a SADC Commission on Climate Change at the SADC Secretariat, ii) defining the Terms of Reference for the Commission, and iii) refining the regional strategic action plan on climate change. The recommendations remain unimplemented and this may explain the low climate change responses at regional level including inter-country collaboration. One good case of inter-country collaboration is the Disaster Risk Management, Sustainability and Urban Resilience (DiMSUR) established in 2014. The DiMSUR involves Malawi, Mozambique, Madagascar and the Comoros. It focuses on improving community resilience to disasters (IOM, 2017).

SADC's work on disaster reduction is guided by frameworks such as the Sendai Framework, Africa Regional Strategy for Disaster Risk Reduction, Plan of Implementation of the Africa Regional Disaster Risk Reduction Strategy, Regional Early Warning Centre, and Hyogo Framework for Action. Some of these have influenced regional social protection-related instruments. These include SADC's Declaration and Treaty, Charter of the Fundamental Social Rights, Code on Social Security, Protocol on Gender and Development, Protocol on Health, and Protocol on Education (UNECA, 2016). Besides the above, a 2011 SADC Water Sector Climate Change Adaptation Strategy is adapted to global warming issues (SADC, 2011; 2018). It guides countries to institute the political, economic, administrative, and infrastructure systems necessary for the region to deal with the uncertainty caused by climate change. This was done to ease the water stresses that the region projects due to climate change (Westermann et al., 2018; see also Ziervogel 2018). The strategy seeks to improve climate resilience of Southern African communities in using integrated water resources at different levels (SADC, 2018) focusing on water governance, infrastructure development and water management.

SADC structures and processes are connected to AU institutions through the African Ministerial Conference on Environment (AMCEN) established in 1985. This is a platform for Ministers responsible for environment, which convenes on issues relevant to climate change (Lesolle, 2012). It provides advocacy on environmental protection in Africa (SADC, 2018). The 12th AMCEN recognized the need to integrate Africa's existing and new climate change programs under a consolidated

framework (Westermann et al., 2018).

3.3.1 National policy and program instruments on climate change

All countries have climate change policies, strategies and programs. These are shown in the Table below. They also have dedicated agencies working on climate change. The agencies are usually the Ministries responsible for the environment and resource-related sectors. There are some gaps in integrating national climate change in local development planning (Nachmany et al, 2015). UNECA (2020a) confirms the implementation lethargy citing lack of political will. At the same time global climate change denialists that continue to misinform and undermine multilateral responses also exist at regional, national and local levels. Evidence suggests that coordinating institutions are critical in integrating climate change policies across sectors (Rawlins and Kalaba, 2020) and territories.

Table 8: National climate change policies, programs and institutions

Country	Policy/Programme/Institution
Angola	National Implementation Strategy for the UNFCCC and the Kyoto Protocol (2008) 2013-2017 National Development Plan National Committee on Climate Change and Biodiversity created under the Ministry of Environment
Botswana	Climate Change Policy and Institutional Framework (2016) National Adaptation Plan Framework (2020) Botswana Climate Change Response Policy Ministry of Environment, Natural Resources Conservation and Tourism
Lesotho	National Climate Change Policy and Sustainable Energy Policy (2017) Climate Change Policy Implementation Strategy Ministry of Tourism, Environment and Culture Ministry of Energy and Meteorology
Madagascar	National Policy to Combat Climate Change (2010) Ministry of the Environment and Sustainable Development
Malawi	National Climate Change Management Policy (2016) Ministry of Natural Resources, Energy and Environment
Mozambique	National Climate Change Adaptation and Mitigation Strategy (2012) National Disaster Management Institute Disaster Management Law and Environmental Law
Namibia	National Policy on Climate Change for Namibia (2011) Ministry of Environment and Tourism

Seychelles	Seychelles National Climate Change Strategy (2009) Ministry of Environment, Energy, and Climate Change
South Africa	National Climate Change Response Policy White Paper (2011) Ministry of Environment, Forestry and Fisheries
Swaziland	National Climate Change Policy (2015) National Climate Change Strategy and Action Plan (2014)
Zambia	National Climate Change Response Strategy (2010) Ministry of Water Development, Sanitation and Environmental Protection
Zimbabwe	National Climate Change Response Strategy (2016) Ministry of Environment, Climate Change, Tourism and Hospitality Industry

Source: Government of Mozambique (1997); Government of Zimbabwe (2016); Government of Angola (2011); Government of Zambia (2011); Nachmany et al. (2015); Rawlins and Kalaba (2020)

Although gaps still exist, a number of common adaptation priorities have been identified in Southern Africa across countries. These are presented in National Communications to the United Nations Framework Convention on Climate Change (UNFCCC), National Adaptation Programs of Action (NAPAs), national strategies and other documents (SADC, 2011; Madziwa and Betzold, 2014). Shared concerns stemming in part from the high dependence of many countries on climate-sensitive sectors, such as agriculture (crop and livestock), tourism, fisheries and forestry are articulated (Madzwamuse, 2010; Lesolle, 2012). All countries have identified agriculture as a priority area for adaptation action, with other common priorities including freshwater resources, coastal zones and fisheries, forestry and human health. The emerging common areas are as shown in the Table below.

Table 9: Identified adaptation needs by sector

Sector.	Common needs and priorities
Agriculture	Crop switching, planting new seed varieties, improving water forecasting systems, raising awareness of the effects of climate change within farming communities, enhancing water efficiency and irrigation measures, instituting rainwater storage systems, agroforestry and early warning systems.
Freshwater resources	Water conservation, recycling and efficiency measures, inter-basin water transfer, improved water resource planning; regional water partnerships; short-term contingency planning and drought relief measures as well as better drought monitoring and forecasting.
Disaster risk reduction and meteorological research	Establishment or expansion of weather monitoring stations, meteorological training, creation of early warning systems for different climate-related threats, and improvement of channels of communication between weather monitoring stations and remote communities.

Forestry	Reforestation and agroforestry, identification of species that are better adapted to higher temperatures and lower precipitation, development of alternative energy sources; and promotion of natural regeneration of indigenous forests.
Human health	Integration of climate change into prevention and monitoring programs for disease prevention; extension of treatment facilities; and improvement of monitoring and forecasting systems.

Sources: Various

National Adaptation Programs of Action (NAPAs) are also an important instrument in use in the region. This instrument (of NAPAs) was established by the Conference of the Parties in 2001 under the climate change work program for least developed countries (IIED, 2013). In the NAPA process, prominence is given to community-level input as an important source of information, recognizing that grassroots communities are the main stakeholders (Kamara, 2018). Angola, Lesotho, Madagascar, Malawi, Mozambique and Zambia have prepared NAPAs (Godfrey and Tunhuma, 2020).

3.3.2 Civil society, local communities and climate change adaptation actions

Southern African civil society is playing a key role in climate change adaptation and mitigation. Different social movements and networks of civil society are involved in the design and delivery of climate policy and actual actions. These include participation on advisory panels and steering committees, capacity building and lobbying for the interests of more vulnerable groups (Madziwa and Betzold, 2014). Examples of civil society organisations participating in climate justice issues include Civil Society Network on Climate Change (CISONECC) in Malawi and others that draw on the UNDP -coordinated instruments like the Global Environmental Facility in Angola, Zimbabwe, Zambia, Malawi and Namibia, and Project 90 by 2030 in South Africa (IIED, 2013; Madziwa and Betzold, 2014; UNDP, 2015; 2020; Green Climate Fund, 2020; Government of Malawi 2020). The initiatives often involve direct partnerships at community level where governments also take part. Participatory assessments are a common approach in the design of UNDP-supported adaptation projects (UNDP, 2015). In Angola, the GEF and the UNDP provided financial and technical support for the drafting of Angola's NAPA (Nachmany et al, 2015). Essentially, local and international non-state organisations are involved in many other climate change mitigation or resilience building projects. Some of these are initiated in response to climate change related disasters.

Some implementation challenges that may inhibit sustainability are being experienced (Green Climate Fund, 2020). Chief among these is weak local institutional capacity. In Zimbabwe for instance, UNDP (2015) observed that the projects were associated with high transport and communication

costs because all logistical support had to be mobilised from Harare. Further, local government partners were not on email and fixed telephones were sometimes not working. Similar experiences were observed in Malawi where human capital in local government departments was not always adequate (UNDP, 2015, 2019; Green Climate Fund, 2020). The incapacitation of governments may perpetuate climate injustice as reflected in coordination and support failures that then undermine local resilience building initiatives (ICCCAD, 2015; Green Climate Fund, 2020).

Challenges notwithstanding there are a number of encouraging community initiatives across the region. In the Okavango Delta of Botswana, Thorndale in South Africa and parts of Swaziland and Lesotho communities are working together towards climate change adaptive and mitigation measures (Kamara et al, 2018). Elsewhere, building on ages-old indigenous technical knowledge on climate change continues to inform adaptation of socio-economic systems to climate change.

Key strategies emerging from communities revolve around resource, knowledge and risk sharing. Different approaches are being used depending on local contexts reaching equally variable scales. What is critical is that community resilience is considerably enhanced. For instance, in Thorndale in South Africa, social solidarity practices such as drought committees, kinship ties, and social interaction help enhance cohesiveness during difficult periods (Kamara et al, 2018). In the Okavango Delta of Botswana, the communities are conserving rangelands helping with adaptation to climate change.

SADC (2010: 9) acknowledges that "local communities have been dealing with climate variability for generations and have learned to adapt their lives and livelihoods to the water cycle". At community level, farmers in particular have adopted useful mechanisms basing on traditional knowledge and experiences to cope with the changing climate conditions. These mechanisms include adjusting land and crop management to suit the prevailing conditions and managing a number of crops to spread the risk of climate change. In Malawi and Zambia for instance, a significant number of community members resorted to fruit trees as a strategy to cope with the famine period in 2001 (Kandji et al 2006). In Zambia, SADC (2010: 10) observes that "every year, after consulting the elders, the Lozi people move from Lealui in the flood plains to Limulaga on higher ground, just before the Zambezi submerges the plains of Zambia". In Botswana, the Basarwa have subsisted in the Kalahari Desert by mobilising different water sources. In Mogalakwena, Limpopo province, South Africa indigenous knowledge of seasons and early warning signs have been used to influence practices such as mixed cropping, the use of livestock manure, and the use of early maturing seeds (Kamara et al, 2018). This has enabled some communities in Mogalakwena to adapt to droughts (ibid).

The range of local adaptations and community innovations is amazing. The experiences reflect

adaptation measures that are being implemented at local level basing on traditional knowledge and experience. However, not all the experiences have been documented for purposes of sharing and scaling. The local knowledge systems used to predict climate changes may require further research. Traditional coping methods based on experiences and patterns over a long period of time (IISD, 2020) also need to be better understood. Climate change and market-oriented state policies however tend to erode these innovations. They are left vulnerable to new and unpredictable weather events. In such instances, local communities need assistance to continue using their local knowledge systems to develop appropriate responses that they can implement at relevant scales in their social, economic and natural landscapes. Where appropriate entry points are identified and used within enabling policy frameworks external actors, including state agencies may aid the adoption of sustainable and just responses to climate change. Unfortunately, food (seed) sovereignty is undermined by industrial agriculture with state support, which undermines local resilience (Manatsa and Chatiza, 2020; ACB, 2020).

3.3.3 Efforts by resource extracting companies to combat climate change

Some mining companies are involved in combating climate change through investments in projects that boost or restore biodiversity as well as those reducing GHG emissions. Examples include Rio Tinto in Madagascar, Anglo-American Platinum Limited in South Africa and Zimbabwe, the De Beers Group in Botswana and South Africa (International Finance Corporation, 2016; Anglo Platinum Limited, 2017; De Beers Group, 2019). Anglo-American Platinum Limited for instance has focused on reduction of emissions, water consumption and waste generation (Anglo American Platinum 2015; 2017).

At Ambatovy mine Rio Tinto has developed integrated environmental and social policies to ensure no net loss, and preferably a net gain of biodiversity while ensuring socioeconomic benefits for local communities (International Finance Corporation, 2016). The De Beers Group has been boosting biodiversity conservation sites for instance at the Succulent Karoo hotspot in Namaqualand in the Northern Cape Province of South Africa (Smuts, 2010). As a diamond mining company in South Africa, Botswana and Angola, De Beers has worked on the integration of biodiversity and mining life cycle operations. It has focused on restoring biodiversity, stability of ground cover and ecological integrity without having to undertake major earthmoving (Smuts, 2010). De Beers has programs such as the Diamond Route Project where it protects and conserves plants, animals, and ecosystems (De Beers Group, 2019). Rio Tinto has worked on boosting biodiversity in Madagascar (Smuts, 2010).

The extraction of timber in parts of the region and more seriously in Mozambique is decimating forests and the ecosystems they support. This opens land for industrial agriculture, which increases

ecological risks and shocks (ACB 2020). The poor are not significantly involved in such largescale extraction except in terms of small scale charcoal trade to supplement their livelihoods that they usually do on marginal lands. Overall, the loss of forest cover which estimates put at 327 000 hectares between 1990 and 2010 for Zimbabwe drive climate change (ACB 2020). The challenges reflect a political economy of conflict that has inadequate safeguards for the poor (Chatiza et al 2020).

However, efforts of resource extracting companies are criticised by human rights and environmental activists (ActionAid, 2008; South African Human Rights Commission, 2016, 2018; Basajjasubi et al, 2019). ActionAid (2008) noted Anglo America's mining operations and poor environmental operations in Mogalakwena, South Africa. The South African Human Rights Commission reports in 2016 and 2018 and Basajjasubi et al (2019) echoed similar concerns of poor environmental responsibilities by mining companies despite the companies having clear environmental targets on paper. Concerns have also been raised on pollution (changes in acidity or alkalinity levels, and the release of arsenic, mercury and other heavy metals, cyanide from gold mining operations) and siltation of the Zambezi, Limpopo and Olifants basins due to mining operations in Zimbabwe, South Africa and Botswana, Mozambique and South Africa (Love, Mahachi and Dirks, 2001; Nhantumbo, 2013; SouthWorld, 2019).

Clearly the operations of big extractive companies have had a long and continuing negative footprint from before most Southern African countries attained national independence. They do not do enough, which means they do not support climate justice. This is unfortunate especially when considered in the context of state capture by global capital as well as general capacity limitations (Manatsa and Chatiza 2020; ACB 2020).

3.4 Climate information dissemination

Climate information is important in providing early warning systems and increasing awareness for climate hazard preparedness. Yet, experiences in Southern Africa depict that this information is often lacking particularly to the locals who need the information to respond accordingly (Popoola, et al 2020; Manatsa and Chatiza 2020). A study in South Africa revealed that agriculture related information on climate change was available but was not adequately disseminated to farmers (Jiyane and Fairer-Wessels, 2012). Cherotich et al, (2012) point out that "Choice of the dissemination channels can influence access and use of climate information and service disseminated to enable the vulnerable groups exposed to climatic hazards build adequate response capacities".

In Zimbabwe, weather forecasts are broadcasted in foreign language and this may mean that some groups of people may miss the information. In most countries in Southern Africa, scientific

knowledge on climate change has not been integrated with traditional and local knowledge systems (Cherotich, Saidu and Bebe, 2012). Cyclone Idai experiences indicate that community members were warned by departments responsible for meteorology about the coming of cyclone but turned out to be incomplete and not on time leading to inadequate responses by residents (Manatsa and Chatiza, 2020). Barriers of flow of information such as poverty, illiteracy, lack of infrastructure and socio-economic factors are not factored in on climate change information sharing (Jiyane and Fairer-Wessels, 2012; Popoola, Yusuf and Monde, 2020). A multi-disciplinary climate information distribution strategy that addresses the information needs of all actors to improve local adaptive capacity and reduce climate hazards.

4. Climate Change and COVID-19 in Southern Africa: Overlapping Crises

The region experienced and declared the first case of COVID 19 on March 5, 2020 (UNFPA 2020). SADC (2020) noted that the drivers as South Africa, Mauritius, Tanzania and the DRC. To limit the spread of the virus governments in the region implemented precautionary measures including lockdowns, movement restrictions, social distancing, hygiene practices and closure of borders (IISD, 2020; UNHCR, 2020). However, these measures exacerbated already staggering levels of economic inequality in many countries. Populations residing in informal settlements and poor regions who rely on precarious livelihoods were seriously affected because their daily livelihoods were disrupted (Patel, et al, 2020). UNFPA (2020) notes that daily earners' practices made observance of COVID19 preventive measures difficult.

Some scholars argue that COVID-19 is deepening the existing inequalities. Further, the inequalities in turn worsen the spread of the pandemic (Fisher and Bubola, 2020). The climate justice debate resurfaces considering that inequality and poverty are identified in this report as key contributors to climate change vulnerability (Dasgupta, et al 2020; UNECA, 2020b). This points to the need for integrated approaches in addressing issues of security, development and human rights in Southern Africa in the context of the twin crises of climate change and COVID19 in compliance with Agenda 2030.

4.1 Intersection of Covid-19 and Climate Change in Southern Africa

The global spread of COVID-19 has strained the public health capacities of many countries across the globe (United Cities and Local Governments, 2020). In addition to that, many economies have been affected by the pandemic (UN-ECA, 2020a; 2020b). The outbreak of COVID-19 resulted in Southern Africa, facing two emergencies simultaneously of a climate emergency and COVID-19. Estimates are that COVID-19 can result in more than 27 million people being pushed into extreme poverty (UN-ECA, 2020a).

Strategies for climate action should be evidence based, and make full use of historical as well as current data (Dasgupta et al, 2020). The response has thus far been characterised by political expedience (IISD, 2020). COVID-19 has demonstrated that scientific evidence is key in garnering public support for radical measures. Climate change had its impacts already visible on the most venerable communities in Southern Africa (Dasgupta et al, 2020). The already high levels of inequality and poverty were worsened by COVID-19 (UN-ECA, 2020b). It is therefore imperative to

prioritise social protection and this has to be done at regional, national and local levels.

Most countries were already facing financial deficits in the fight against climate change. The outbreak of COVID-19 only exacerbated these budget deficits. Southern African countries responded to COVID-19 by announcing relief packages that had a significant GDP share. Maher and Baskaran, (2020) observe that South Africa announced a relief package of USD30 billion (roughly 10% of GDP), Namibia announced USD544 million (4.25% of GDP), and Lesotho announced USD113 million (about 6% of GDP). With the possible exception of South Africa, measures adopted across Southern Africa to cushion the impact of the pandemic on the economies and livelihoods are mostly minimalist welfare, and largely dependent on international aid. UNECA (2020a:8) observes as follows regarding the repositioning of the state:

'COVID19 has given rise to an uncontested recognition of the centrality of the state in managing the crisis...[it] has demonstrated the urgent need to build state capacities'

Such uncontested leadership has been eroded over time based on market-led policies that advocated a minimalist state generally unavailable to the poor. the COVID19 pandemic has thus energised the role of the state and with it the public's expectation of a just and competent one. The same exertions of state efforts are expected regarding the climate change agenda considering that the two crises must be tackled at the same time and that the false choice that climate justice is less of a priority than the COVID19 threat is unacceptable (ibid). The demonstrated possibilities of mass social mobilisation in response to the pandemic can also be attempted in addressing climate change.

4.2 Challenges in responding to climate change related hazards and COVID19

Climate change related hazards such as water scarcity and floods that destroy homes and livelihoods are common in Southern Africa (Kamara et al, 2018). Local authorities struggle to maintain social distancing during floods and other events. This is a specific challenge in informal settlements where social distancing was already difficult to enforce (Maher and Baskaran, 2020). This compromised the COVID-19 protocols meant to prevent the spread of the virus (IISD, 2020). In Zimbabwe, a months-long drought left millions without access to clean water and at risk of acute food insecurity (Dasgupta et al, 2020). Clean water was a necessity in the fight against COVID-19. COVID-19 lockdowns made moving from one area to another difficult affecting those reliant on migration as an adaptive strategy (Maher and Baskaran, 2020).

The C40 network embraced COVID-19 preventative measures. Its COVID-19 Recovery Task Force

focused on achieving sustainable, resilient and equitable city economies after the COVID-19 pandemic. This built on pre-COVID19 attention to ensure measures to avoid climate change-related crises (Westermann et al., 2018). For example Durban adapted its risk assessment tool for the climate crisis to the COVID-19 emergency (IISD, 2020). This was made possible through the Virtual city-to-city mayoral and technical exchanges, including thematic webinars on waste management, food systems, transportation and adaptation.

Essentially, tools and approaches used by authorities that had taken a lead on climate change mitigation were easily adapted for use in the COVID19 fight. Contrastingly, those with ill-developed climate change programs also took longer to mobilise their societies to address the pandemic. Post-pandemic competences are going to be equally affected by the levels of preparedness across Southern Africa and the rest of the world. This is why pre-COVID19 capacities (determined by entrenched inequalities within and across jurisdictions) will determine socio-economic and ecological recovery after the pandemic.

4.3 Reimagining the region post-COVID19

COVID-19 has provided an opportunity for nations to accept the existence and impacts of inequalities within societies. Poor access to basic services such as health, water and sanitation, nutrition, and protection has been exposed by the COVID-19 pandemic. Unaddressed they will be deepened by both the pandemic and measures to fight it. The United Cities and Local Governments (2020) acknowledged that the COVID-19 pandemic put magnifying glasses on the social protection needs and short-comings that were already existing in societies. Building resilience against climate change is important in responding to both climate change and COVID-19.

Whilst for climate change the responses were more like optional, with COVID-19 the responses were more mandatory and the support from government and other actors was critical (Maher and Baskaran, 2020). This support is also called for in the fight against climate injustice (Godfrey and Tunhuma, 2020). Investments in processes, practices and systems that build social, economic and environmental resilience in the wake of COVID-19 and climate change have become more critical than ever (Maher and Baskaran, 2020). As with COVID-19, climate change requires national leadership to device strategies to protect the vulnerable in communities as well as national collaboration, multi-country and public-private sector collaboration towards innovative adaptation and mitigation strategies (Kamara et al, 2018; UNECA 2020a).

Evidence suggests that destruction of the environment and biodiversity makes public health pandemics more likely (TRALAC, 2020; ACB 2020; UNECA 2020a). On the other hand, pollution and

other man-made factors that drive climate change weaken the health of human beings, raising their vulnerability to viruses and other diseases (IISD, 2020). These arise from and reflect regulatory frailties. State capacity and responsiveness especially to those of the poor and marginalised has become critical. Despite having the negative implications of COVID-19 in communities, the pandemic fosters reliance on the green economy which is a major boost for environmental resilience. A green recovery from the pandemic will ultimately boost economic growth and resilience (Maher and Baskaran, 2020). ACB (2020) notes that farmer seed systems and restorative agroecological systems are critical (see also Manatsa and Chatiza 2020). At the same time Chatiza et al (2020; Chatiza 2019) highlight the place of good local and national governance in recovery and development given pre-disaster institutional development gaps.

5. Conclusion

Southern Africa is vulnerable to the impacts of climate change and this is already manifesting in the form of rainfall variability and extreme events such as heat waves, floods and droughts. The costs of climate change mostly affect the vulnerable populations (the poor and those in marginal areas) who have weak coping mechanisms. Issues of poverty and inequality are key drivers of climate change vulnerability. These same issues worsen the spread of COVID-19 in similar ways to other climate change-induced disasters. Social protection strategies at all levels are therefore critical in the fights against climate change and COVID-19. This requires acknowledging and directly fighting inequalities.

Southern Africa's contribution to GHG emissions is less compared to other regions and continents. However, experiences are not homogenous. The contribution to climate change and the vulnerabilities between different countries varies. Despite these variations, the region is making efforts to mitigate and adapt to climate change. At national and local level, there are also measures that are being implemented and these are critical in enhancing a collective fight against climate change, climate injustice and pandemics like COVID19.

The paper recommends mainstreaming of climate change policies and strategies across various sectors at national and local level. Support for community, household and individual measures in fighting climate change is important. In addition, integrating indigenous knowledge systems and scientific knowledge increases adaptation capacity at all levels. Social safety nets for the poor and vulnerable groups are critical in the fights against both COVID-19 and climate change. Whilst the paper has presented a review of community strategies in adapting to climate change, some strategies may not be documented and is therefore recommended for further primary research to unpack some of the community strategies being practised. Competent and accountable state and regional bodies are critical. Unfortunately, these currently trip on fragmented and fragmenting layers of policies, laws and local to international bodies that are under-resourced and weak in polarised political environments. State capture by local and global capital, extractive-driven development models and debt also weigh down efforts at building climate justice.

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