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Scaling Up Private Sector Financing for Climate Change Adaptation in Zimbabwe: A Brief Literature Review

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Abstract

Developing countries such as Zimbabwe that are highly vulnerable to climate change, are struggling to close the funding gap for climate change adaptation largely due to constrained fiscal space, and also the inadequate climate finance flows from developed countries. This article reviews the existing literature relevant to closing the climate finance gap in Zimbabwe through scaling up funding from the private sector funding. The literature shows that current private sector flows for climate finance are far below what is required to meet the needs of the country. The paper presents literature review findings, and also identifies solutions for unlocking more domestic private sector finance for climate change adaptation. The findings of the study contribute towards informing government policy on climate change particularly with regards to the mobilization of additional finance.

Keywords: *Climate Finance, Climate Change Adaptation, Vulnerability, Extreme Weather Events, Paris Agreement*

1. Introduction

A recent report by the Intergovernmental Panel on Climate Change (IPCC) indicated that global temperatures will rise to 1.5 degrees Celsius compared to pre-industrial levels in the next two decades (IPCC, 2018). The climate crisis is driven primarily by human activities such as the burning of fossil fuels as well as deforestation, among others. As global warming accelerates, the impacts of climate change such as droughts, corral bleaching, wildfires, sea level rises, heat waves, and cyclones, have intensified over time (Hartely and Tando, 2022).

The effects of the climate shocks are being felt harder in developing countries like Zimbabwe (Aluwani, 2022). This is largely attributed to the economic fragility, as well as the lack of technical and institutional capacity. Against this background, the unravelling climate change crisis is threatening to undo decades of progress with regards to socio-economic development, education, health, and also poverty reduction. The vulnerability of developing countries such as Zimbabwe is further exacerbated by their reliance on rain-fed agriculture, which is now unpredictable due to climate change. Freeman (2017) linked climate change to increased conflicts and migration particularly in the horn of Africa. Thus, the cocktail of climate crisis and weak governance systems has led to increased tensions among communities and states at large over natural resources such as grazing pastures for livestock, arable land and water sources.

In light of the afore mentioned challenges, radical actions are required so as to avert the climate catastrophe. Chief among them is the significant reduction in emissions by the end of the current decade (IPCC, 2018). In the long term, many countries have committed to achieving net zero emissions. There is also an urgent need to adapt to the unraveling climate change crisis, triggered by historical emissions which have caused the earth to warm up by 1.1 degrees Celsius already, since the advent of the industrial revolution. In addition to large scale behavior changes as well as societal transformation, responding to the climate crisis requires huge financial resources and advances in technology. It is imperative to note that most developing countries like Zimbabwe lack the financial capacity, due to constrained fiscal space, owing to making competing priorities as well as limited resources. The situation has been further compounded by the global economic headwinds due to the slow recovery post Corona Virus 2019 (COVID-19) pandemic, rising energy costs and also the war in Ukraine.

A report released at the twenty seventh gathering for Conference of Parties (COP27) that was held in Egypt in November 2022, indicated that as much as USD 1 trillion per year in external finance is needed by developing countries to combat climate change (Reuters, 2022). However, only a fraction of this is currently being made available annually through various channels, mostly from the public sector.

This paper will investigate the investigate the role that can be played by the private sector in closing the funding gap for climate change adaptation. Zimbabwe will be used as a case study. The paper will review the literature on climate finance, asses the adaptation funding gap and explore ways for scaling up private sector financing in Zimbabwe.

2. Background

Zimbabwe has a population of 15 million people. About 60 percent of the population resides in the rural areas where the main economic activity is agriculture (Mapfumo et al, 2012). The agriculture sector accounts for 70 percent of the employed workforce and contributes about 15 percent to the Gross Domestic Product (Maiyaki, 2010). The country is highly vulnerable to climate change as a result of its dependence on rain-fed agriculture. Hence, it fundamentally important that Zimbabwe steps up efforts geared towards adaptation to the climate change impacts. There is a need to increase the resilience of Zimbabwe, by strengthening its capacity to predict and rapidly respond to impacts of climate shocks.

Zimbabwe is already reeling from the increasing impacts of climate change as evidenced by the increased frequency of extreme weather events such as floods and droughts in recent. In 2019, the country experienced the worst floods in history, as cyclone Idai destroyed property and left about 900 people dead or missing (Munsaka et al, 2021). Moreso, half the country is food in secure largely due to frequent droughts linked to climate change. The climate change impacts in Zimbabwe are projected to be severe in the near term and the rest of the 21st century (Munsaka et al, 2021). The change in climate will further threaten already strained water supplies, food and nutrition security, health, hydro-electric power generation, human settlements and biodiversity amongst other key areas of human development thereby impeding the country's social and economic development aspirations.

According to Mazvimavi (2010), Zimbabwe's rainfall has declined by 5 per cent in the last century. It is important to note that the seasonal rainfall has increasingly become erratic, with significant delays in onset and also more frequent incidents of extreme weather events such as floods as well as droughts. The climate induced shocks faced by the country have led to dwindling freshwater suppliers, poor harvests and increased desertification, among other challenges. In the last decade, the country has been hit by atleast one cyclone per year. The situation has been made worse by the El Nino weather phenomena which is causing droughts which sometimes last up to three consecutive years (Matunhu et al, 2022). Such a drought was recently experienced during the period between 2014 – 2016. As a result of the impacts of climate change, Zimbabwe which was once the breadbasket of the continent now relies on food imports which drain the limited foreign reserves as well as donor aid. The decline in maize production, which is a staple food for Zimbabwe, has led to sharp increases in prices. Climate change affects the most vulnerable rural inhabitants who depend on small scale farming for subsistence.

According to recent studies, super El Nino events with double the impact are likely to become common in the next twenty years (Cai et al, 2018). Furthermore, by the end of the twenty first century, temperatures are projected to increase by upto 3 degrees Celsius in Zimbabwe (Unganai, 1996). These climatic changes will lead to further decline in agricultural yields over time, thereby threatening livelihoods. It is estimated that Zimbabwe will experience a decline in maize production by 50 percent between 2020-2080 (Lunduka et al, 2019).

It is a matter of paramount importance that Zimbabwe adapts to the new normal under climate change conditions. Failure to adopt robust measures will expose the country to worsening food insecurity, loss of infrastructure and lives due to floods, and even threaten the economy given the important role of agriculture. It is also imperative to note that climate change could lead to reversal of gains made in SDGs such as poverty, hunger, gender equity, among others.

Notwithstanding the efforts of the development partners as well as the government of Zimbabwe in particular, there is still a huge gap for climate change adaptation. The private sector, both domestic and international, can play a significant role in closing the climate finance gap for adaptation in Zimbabwe. This view is backed by theoretical as well as empirical evidence from other developing countries around the world. That being said, there has been limited research on the potential of private sector finance for climate change adaptation in the context of Zimbabwe.

Cognizant of the above, this paper seeks to close the literature gap on private sector finance for climate change in Zimbabwe. The next section of this paper will outline the methodology. This will be followed by a discussion of findings and finally, an assessment of gaps in literature as well as the suggestions for areas for consideration in future research.

3. The Literature Review Approach

2.1. Methodology

In carrying out this research, existing literature on the role of private sector funding for climate change adaptation, particularly in the context of Zimbabwe, was reviewed. The literature considered included scholarly articles, books, as well as key reports on climate finance matters. The findings from various empirical studies were integrated into this research with the goal of assessing the collective evidence on private sector financing for climate change adaptation in Zimbabwe. This methodological approach for conducting research is fundamentally important as it enables various perspectives to be considered (Syder, 2019). Synthesizing of existing literature is also essential towards the establishment of a firm foundation for studies (Webster and Watson, 2002).

2.2. Search Approach

The key words which were searched include climate finance, private sector climate change, national adaptation plan, and climate change adaptation in Zimbabwe. These words were carefully chosen so as to ensure that relevant literature on climate finance and private sector funding for adaptation in Zimbabwe was found. The literature chosen was mostly published since the turn of the century. This was complemented with key reports published by the IPCCC, the UNFCCC, COP, and other international organizations such as the GCF and MDBs. The government o Zimbabwe's publications and policy documents on climate change, also provided useful data which was used to validated the literature.

4. Literature Review

4.1 Climate Finance landscape

Hong et al (2020) defined climate finance as the domestic, national, as well as the international funding which comes from various sources which include the public, private and also philanthropy, that is aimed at supporting the transition to low emission and climate resilient development pathways. Developed countries have in the past pledged to support developing countries with increased amounts of climate finance. This is in recognition of the developed countries responsibility for past emissions which are driving current impacts of climate change (Fite, 2018). Climate finance investments have become even more critical given then need to build back better, in the post COVID-19 pandemic recovery era. Climate finance goes a long way towards helping vulnerable developing countries to adapt and mitigate to climate change.

The global architecture under the UNFCCC is central in coordinating the flow of climate finance (Hong et al, 2020). There are several funds which operate under the financial mechanisms. These include the GCF, the Global Environmental Facility, Climate Investment Funds, and the Adaptation Fund, just to mention a few. The entities which operate under the UNFCCC financial mechanism are accountable to the COP that meets annually to decide on key policies, and also priorities.

The Paris Agreement, which was adopted in November 2016, ushered in a new era where countries across the world committed to curbing emissions so as to keep temperatures from rising beyond 2 degrees Celsius beyond preindustrial levels (AL-wad et al, 2018). It also led to commitment by developed countries in particular, for ramping up climate finance, by pledging USD 100 billion annually. The availability of predictable climate finance is fundamentally important to the realization of climate goals. Since the Paris Agreement in 2016, the scaling up, tracking and also reporting on climate finance flows has become a priority (Bodnar et al., 2015).

The public sector accounts for most of climate finance which is mobilized annually (Pauw et al, 2016). In particular, developed countries remain the major contributors of climate finance. This is subsequently channeled to developing countries intermediaries such as bilateral development assistance, MDBs, climate funds, and also non-governmental organizations. Developing countries are also contributing by mobilizing domestic resources for use in funding climate related initiatives. However, this is often very limited given the severely constrained fiscal space in most developing countries.

A study by Buchner et al (2021), showed that there has been a steady increase in global climate finance from USD 364 billion 2011 to USD 632 billion in 2020. However, this is still far below the required levels of climate finance required to meet the ambitious climate targets by 2030. The climate finance mobilized internationally must be ramped up by 600% to ensure that there are sufficient resources to avert the dangerous climate impacts (Buchner et al, 2021). It is also imperative to note, that out of the USD 632 billion global climate finance raised in 2020, only USD 46 billion went towards adaptation (Trabacchi, 2023). Thus, climate change adaptation remains under funded. This is particularly worrying given that developing countries are projected to have an adaptation needs of around USD 155 – USD 330 billion annually by 2030 (UNEP, 2022).

There are growing concerns on the regional distribution of the global finance which remains skewed towards Asia, Europe and north America countries (Buchner et al, 2021). For example, out of the USD 632 billion mobilized in 2020, only USD 30 billion ended up in Africa. Another area of concern is the imbalance between mitigation and adaptation funding (Tirpak and Parry, 2009). That is, more funding is going towards mitigation when compared to adaptation, as indicated above. Lastly, private sector funding, especially for climate change adaptation in developing countries remains low. Therefore, scaling up private sector is critically important to meeting the ambitious climate change targets.

4.2 Adaption Funding Gap in Zimbabwe

Climate change adaptation is defined as the adjustments in ecological, social or economic systems as part of the measures in response to ongoing or expected climate change impacts (Smit and, 2018). The relevant adjustments made at national and community level in response to climate change include practices, policies as well as physical infrastructure. Climate change adaptation is intricately linked with livelihoods, local culture, values, the climate finance flows, and the socio-economic systems which are found in a given country or community. Climate change adaptation can be categorized into ethno-science and techno-science (Matanga and Jere, 2011). The ethno-science adaptation approach relies on local knowledge systems which include planning drought resistant crop and early planting, while the techno science methodology is based on modern technologies such as drones and other smart agriculture technology (Gukurume, 2013). It is imperative to note that local communities in developing countries often apply indigenous knowledge based adaptation systems which have been passed on from generation to generation.

It is essential that a thorough local assessment for vulnerability is conducted so as to fully understand the adaptation needs for the country and local communities (Nath and and Behera, 2011). This is key to ensuring that the subsequent climate change adaptation strategies adopted respond to the local dynamics in terms of the environmental and socio-economic context. Given the central role played by agriculture in the economy as well as livelihoods, the adaptation efforts by Zimbabwe have mostly focused on building resilience in smallholder agriculture activities (Mushore et al., 2013). This is fundamentally important noting that half the country is considered to be semi-arid, and thus extremely vulnerable to climate change rainfall variability.

The government of Zimbabwe considers climate change as one of the leading challenges which are undermining the progress made so far in attaining key development goals particularly in respect of eradicating extreme hunger, as well as poverty (Gukurume, 2013). Hence, the country has made strides in strengthening its institutional and policy framework to combat climate change. Policies provide the much-needed framework for climate action. They are also essential towards ensuring coordination and effective implementation of adaptation measures. More importantly, robust national policies outline the key priorities, provide guidance on resources required and also set targets which need to be met. In light of the above, Zimbabwe, has accelerated efforts to improve the policy framework as part of its measures for climate action. The first climate related policy, namely, the National Climate Change Response Strategy (NCCRS) was developed in 2014. Then

in 2017, Zimbabwe crafted the National Climate Policy which places climate change adaptation at the center of national development agenda. In 2015, Zimbabwe produced the first NDC, which has been revised further over the years. The NDC serves as the main policy document on mitigation priorities for the country. However, Zimbabwe is yet to develop the National Adaptation Plan (NAP), a key policy document required by countries to serve as a guide for climate change adaptation efforts.

Despite the notable progress on policy framework, Zimbabwe currently suffers from a number of barriers which are hindering its ability to adequately adapt to climate change. Chief among the barriers is the limited financial resources compared to the adaptation needs (Chagutah, 2010). The situation has been further complicated by the political situation of the country which has made it difficult for Zimbabwe to access some streams of international climate finance, and development aid. That is, Zimbabwe has been isolated international since the turn of the century, primarily due to concerns over violation of property rights during the chaotic land reform programme and persistent violation of human rights. Another key challenge limiting the adaptive capacity of Zimbabwe is the lack of sufficient climate information for decision making. Such information includes reliable climate data which can be used for making science-based decision making. In the absence of accurate climate information and early warning systems, it will always be harder for developing countries to sufficiently adapt to climate change. Lastly, Zimbabwe also lacks systems to sufficiently monitor effectiveness of plans for adaptation planning. To address this challenge, Zimbabwe must urgently develop its NAP, which will then outline priorities for climate change adaptation.

According to the revised NDC released in 2021, the government of Zimbabwe confirmed that the mitigation goals till 2030 will require funding of upto USD 4.8 billion (UNFCCC, 2022). This is equivalent to the annual fiscal budget of the country. What is more, this does not include the adaptation funding requirements for Zimbabwe which are yet to be fully quantified. With the financial support from the GCF, Zimbabwe is currently in the process of developing a NAP in accordance with the UNFCCC. The NAP provides a systematic approach to be followed by all developing countries in adapting to the impacts of climate change. Furthermore, the NAP lays out the road map, set clear targets, as well as the timelines for archiving them. More importantly, the NAP clearly identifies the gaps in adaptation and also provides a plan for mobilizing financial recourse. The countries have to monitor, report, and review the NAP over time, as per the requirements of the UNFCCC. Once the NAP is finalized, Zimbabwe will have a specific figure showing the adaptation funding gap in the country over a given period.

Given the limited financial resources, Zimbabwe depends heavily on donor funding for climate change adaptation (Gukurume, 2013). It is important to note that Zimbabwe has been receiving climate finance from various sources under the UNFCCC mechanism. In 2019, the country received USD 121 million in climate finance (Buchner et al, 2021). Half of this went towards climate change adaptation. The sources of funding included the GCF, Adaptation Fund, GEF, and the Climate Investment Fund (CIF), just to mention a few. Additional funding has been received

from bilateral donors in the form of official development assistance. The funding has gone towards adaptation projects that are being implemented across sectors including agriculture.

However, the adaptation funding gap remains large. For example, Zimbabwe has a pipeline of climate finance funding proposal for projects where it is requesting USD 270 million from the GCF. The full extent of the funding gap for adaption will be known once the NAP for Zimbabwe is published by the government. More precisely, the NAP will provide an estimate of the climate change adaptational financial needs over a given period.

The closing of the climate finance gap for adaptation in Zimbabwe will only be achieved through the concerted efforts involving both public and private sector. It will also require massive policy reforms geared at creating an enabling environment as well as building the capacity of key institutions to ensure the relevant adaptation measures are fully implemented.

4.3 Private sector funding for climate adaptation

The importance of the private sector to an economy cannot be over emphasized. It accounts for two thirds of investments on the African continent (UNECA, 2020). More so, the private sector generates upto 75 percent of the economic output and accounts for 90 percent of employment across the Africa. Given the significant role of the private sector, there is increased focus on its potential role in supporting adaptation and building resilience among Sub-Saharan economies like Zimbabwe. Thus, there can be no successful transition to low emission development pathways if the private sector is not heavily involved in climate finance.

Notwithstanding the adverse effects to business, climate change is also creating opportunities for private sector to pursue. There are two main opportunities for private sector which are emerging due to the unravelling climate change crisis (Resch and Gao, 2022). On one hand, the climate crisis is causing demand fluctuations across sectors, such as agriculture and tourism, which creates business opportunities. Businesses need to adapt through embracing new technologies and ways of doing things, so as to harness the opportunities. On the other hand, climate resilient projects such as road infrastructure present an opportunity for private sector investors with capital to provide cofinancing. The new business opportunities provide a compelling case for privates sector to scale up investment in climate change in developing countries.

Private sector firms are already playing a role in climate change. In most cases, the private sector companies mainstream adaptation activities into their day-to-day operations, sometimes without intentionally doing so. The private sector can play three main roles with regards to climate change mitigation (Cochu et al, 2019). Chief among them is internal adaptation which entails private companies climate proofing their own operations and supply chains with the goal of minimizing or averting climate related risks. Businesses also undertake this role with the aim of ensuring profitability and continuity. The second role played by the private sector is providing funding for adaptation. Such funding is given to other players for them adapt to climate change. For example, farmers rely on banks and micro finance institutions for funding to obtain smart technologies which are used in building climate resilience. Thirdly, the private sector plays a central role in

providing critically important goods and services for others to adapt. This is particularly the case in relation to technology produced by the private sector which is essential towards climate change adaptation. Most private sector companies play different roles simultaneously. The small and medium enterprises (SMEs) make up a larger proportion of private sector players in most developing countries. They often lack capital and technical skills which often hinder their ability to participate at scale on climate change adaptation. With necessary support in terms of mentorship and capital, SMEs could (Trabacchi et al., 2020).

5. Discussion and Conclusion

5.1. Discussion of Findings

Empirical studies on climate finance in Zimbabwe have mostly focused on public sector financing by international agencies and the government as well as the policy environment (Chirisa et al, 2021). The persistent climate finance gap in developing countries like Zimbabwe justifies the consideration of the potential role which can be played by private sector. The scaling up of private sector finance could go a long way towards further enhancing climate resilience for vulnerable communities, and small holder farmers. Unfortunately, Zimbabwe's access to international private sector markets remains constrained due to historical challenges that include concerns over political risk as well as human rights violations. Therefore, the country must contend with boosting available climate finance for adaptation from the domestic private sector. This makes the domestic private sector the most important potential source for additional climate finance in Zimbabwe.

Moreover, existing literature has also pointed towards lack of adequate policies as being a key challenge which is hampering access to climate finance for adaptation in Zimbabwe. Private sector players can only get more involved in climate finance adaptation if the enabling environment, in the form of robust policies. One key policy gap which persists to this date is the lack of NAP for Zimbabwe. The policy development thrust should also focus on addressing the market imperfections which have been observed in the literature. By so doing this would enable the market to increase its performance in terms of allocating capital and risks efficiently with regards to climate change adaptation funding.

It is important to highlight that as long as the economy of Zimbabwe remains subdued, the domestic private sector will not be able to provide sufficient capital as well as goods and services required for climate change adaptation. The capacity utilization among local firms remains low at around 30-40 percent (Tinarwo, 2016). Inlight of these challenges, the private sector has shrunk over the years. It is now dominated by SMEs which often lack financial and technical capacity to invest towards climate change adaptation.

The evidence from the existing empirical literature demonstrates that public finance will always be central to leveraging more private sector investments towards climate change adaptation in Zimbabwe. Thus, the more public sector finance flows towards climate change, the more private sector investments are catalyzed. Unfortunately, due to reasons alluded to previous, especially with regards to perceived risks, Zimbabwe has, over the years, not been able to access international

credit markets. Put simple, the country can not borrow due to debt overhang challenge. This limits the amount of climate finance Zimbabwe can get as the country can only access grants.

Last but not least, the government of Zimbabwe and donors should focus on stimulating creativity in the private sector. This can be achieved through the establishment of climate innovation hubs which are sufficiently funded and equipped. The innovation hubs should be complemented with improvement in the policy environment. The focus on innovation will spur new business models and climate finance solutions which are oriented towards adaptation. In the long term this would lead to increased investments from the private sector for climate change mitigation. This approach will unlock the potential of the SMEs.

5.2. Conclusion

The private sector can play a huge role in closing the climate finance gap. Moreover, the private sector can also provide critical goods and services which can support others in climate change adaptation such as technology and key climate information, among others. However, the existing literature has revealed significant challenges which are hindering the private sector players from increasing their support for climate finance. To this end, there is a need for concerned efforts to address these barriers so as to unlock the potential of private sector companies. Above all, the government of Zimbabwe should urgently finalize and release the NAP which would outline the climate change adaptation needs in terms of funding and also technical gaps, as well as the relevant priorities.

6. References

Al-Awad, T. K., Saidan, M. N., & Gareau, B. J. (2018). Halon management and ozone-depleting substances control in Jordan. International Environmental Agreements, 18, 391–408.

Aluwani, T., (2022). The Impacts of Climate Change, Carbon Dioxide Emissions (CO2) and Renewable Energy Consumption on Agricultural Economic Growth in South Africa. ARDL Approach Sustainability Vol. 14, No. 24, pp 16468, 2071-1050.

Bodnar, P., Brown, J., and Nakhooda, S., (2015). What Counts: Tools to Help Define and Understand Progress Towards the $100 Billion Climate Finance Commitment. Working Paper. Washington, DC: World Resources Institute.

Buchner, B., Naran, B., Fernandes, P., Padmanabhi, R., Rosane, P., Solomon, M., Stout, S., Strinati, C., Tolentino, R., Wakaba, G., Zhu, Y., Meattle, C., and Guzmán, S., (2021). Global Landscape of Climate Finance 2021. Climate Policy Initiative.

Cai, W., Wang, G., Santoso, A., McPhaden, M. J., Wu, L., Jin, F., Timmermann, A., Collins, M., Vecchi, G., Lengaigne, G., England, M. H., Dommenget, D., Takahashi, K., Guilyardi, E., (2018). Increased frequency of extreme La Niña events under greenhouse warming. Nature Climate Change.

Chagutah, T., (2010) Climate Change Vulnerability and Preparedness in Southern Africa: Zimbabwe Country Report. Heinrich Boell Stiftung, Cape Town.

Chirisa, I., Gumbo, T., Gundu-Jakarasi, V. N., Zhakata,W., Karakadzai, T., Dipura, R., and Moyo, T., (2021). Interrogating Climate Adaptation Financing in Zimbabwe: Proposed Direction. Sustainability, 13, 6517.

Cochu, Annica; Tobias Hausotter and Mikael Henzler (2019): The Roles of the Private Sector in Climate Change Adaptation – an Introduction. Berlin.

Fite, M. D., (2018). The international responsibilities of developed countries on adaptation to and mitigation of climate change: an ethical mandate. BRICS law journal, Vol V, 10.21684/2412-2343-2018-5-2-100-111

Freeman, L., (2017). Environmental Change, Migration, and Conflict in Africa: A Critical Examination of the Interconnections. The Journal of Environment and Development, 26(4), 351–374.

Gukurume, S., (2013). Climate change, variability and sustainable agriculture in Zimbabwe's rural communities. Russ. J. Agric. Soc. Econ. Sci. 14, 89–100. doi: 10.18551/rjoas.2013-02.10

Hartely, A. J., and Tando, A., (2022). The impacts of climate change. Earth and its resources, Vol 10, doi: 10.3389/frym.2022.716479.

Hong, H., Karolyi, G. A., and Scheinkman, J. A., (2020). Climate Finance. Oxford University Press, doi:10.1093/rfs/hhz146.

IPCC (2018). Global Warming of 1.5°C. An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty. Masson-Delmotte, V., Zhai, P., .-O., Pörtner, D., Roberts, J., Skea, P. R., Shukla, A., Pirani, W., Moufouma-Okia, C., Péan, R., Pidcock, S., Connors, J. B. R., Matthews, Y., Chen, X., Zhou, M. I., Gomis, E., Lonnoy, T., Maycock, M., Waterfield, T,M. Eds. Cambridge University Press, UK 616 pp..org/ 10.1017/9781009157940.

Lunduka, R. W., Mateva, K. I., Magorokosho, C., and Manjeru, P., (2019). Impact of adoption of drought-tolerant maize varieties on total maize production in southeastern Zimbabwe. Climate and Development, 11:1, 35-46, DOI: 10.1080/17565529.2017.1372269.

Maiyaki, A. A., (2010). Zimbabwe's agricultural industry. African Journal of Business Management Vol. 4(19), pp. 4159-4166.

Mapfumo, A., Mushunje, A., and Chidoko, C., (2012). The impact of government agriculture expenditure on poverty in Zimbabwe. University of Fort Hare, Republic of South Africa

Matanga, E., and Jere, S., (2011). The Effectiveness of Ethno-Science Based Strategies in Drought Mitigation in Mberengwa District of Southern Zimbabwe. Clarion, PA: Clarion University of Pennsylvania.

Matunhu, J., Mago, S., and Matunhu, V., (2022). Initiatives to boost resilience towards El Niño in Zimbabwe's rural communities. Journal of Disaster Risk Studies 14(1), a1194. https://doi.org/10.4102/ jamba.v14i1.1194.

Mazvimavi, D., (2010). Investigating changes overtime of annual rainfall in Zimbabwe. Hydrology and Earth Systems Science, Vo 14, 2671–2679.

Mullan, M., Kingsmill, N., Matus Kramer, A., and Agrawala, S., (2013). National Adaptation Planning: Lessons from OECD countries (OECD Environment Working Papers, No. 54). OECD Publishing.

Munsaka, E., Mudavanhu, C., Sakala, L., Manjeru, P., and Matsvange, D., (2021). When Disaster Risk Management Systems Fail: The Case of Cyclone Idai in Chimanimani District, Zimbabwe. International Journal Disaster Risk Science, 12:689–699.

Mushore T. D., Mudavanhu C., and Makovere, T., (2013). Effectiveness of drought mitigation strategies in Bikita District, Zimbabwe. Int. J. Environ. Protect. Policy. 1, 101–107. doi: 10.11648/j.ijepp.20130104.19.

Nath P. K., and Behera B., (2011). A critical review of impact adaptation to climate change in developed and developing economies. Environment Development Sustainaible, 10.1007/s10668-010-9253-9.

Pauw, W. P., Klein, R. R. T., Vellinga, P., and Biermann, F., (2016). Private finance for adaptation: do private realities meet public ambitions? Climatic Change, 134:489–503.

Resch, E., and Gao, J., (2022). Climate Change: Business Risks and Opportunities - The Role of Private Sector Adaptation. UNEP, 978-87-93458-12-3.

Reuters, (2022). "COP 27 Developing countries need $1 trillion a year in climate finance -report". Reuters, November 8, [Online]. Available at https://www.reuters.com/business/cop/cop-27-developing-countries-need-1-trillion-year-climate-finance-report-2022-11-08/ [Accessed 8 August 2023].

Smit, B., and Pilifosova O., (2018). Adaptation to Climate Change in the Context of Sustainable Development and Equity. The Energy and Resources Institute (TERI).

Syder, H., (2019). Literature review as a research methodology: An overview and guidelines. Journal of Business Research. Journal of Business Research, 104,333–339.

Tinarwo, R., (2016). An investigation into the challenges faced by Small to Medium Enterprises in Zimbabwe: A case of Gazaland Market. Journal of Business and Management, Vol 18, 2278-487X, p-ISSN: 2319-7668.

Tirpak, D., and Parry, J., (2009). Financing Mitigation and Adaptation in Developing Countries: New options and mechanisms. International Institute for Sustainable Development. Background paper.

Trabacchi, C., (2023). Collaborating to accelerate investment in climate adaptation and resilience. Proparco, Private sector and development.

UNECA, (2020). Economic report on Africa – Innovative finance for private sector development in Africa.

UNEP (2022). Adaptation GAP Report 2022: Too Little, Too Slow - Climate adaptation failure puts world at risk. Nairobi. https://www.unep.org/adaptation-gap-report-2022

UNFCCC, (2022). Zimbabwe's Initial Adaptation Communication to the United Nations Framework Convention on Climate Change. Accessed on 9 July 2023 chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://unfccc.int/sites/default/files/ACR/2022-10/zimbabwe-adcom-2022_final.pdf

Unganai, L. S., (1996). Historic and future climatic change in Zimbabwe. Climate research, Vol. 6: 137-145, 1.

Webster, J., and Watson, R. T., (2002). Analyzing the past to prepare for the future: Writinga literature review. Management Information Systems Quarterly, 26, 3.