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Climate change and its impact on public debt in Zimbabwe

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Abstract

Understanding the impact of climate change on public debt has become a key objective for the proponents of sustainable development. Underpinned by the mainstream classical theories on public debt, this research examines the effect

of climate change on public debt. It adopts an exploratory design where 15 key informant interviews (KIIs) were conducted with experts whose work involves climate change or public debt. Thematic analysis was used to analyze responses from the KIIs. Findings indicate that climate change poses severe challenges to the entire food systems value chain, with ramifications for the general macroeconomic environment, including public debt in Zimbabwe. This paper recommends that for Zimbabwe to reduce the negative impacts of climate change on public debt, efforts should be directed towards lobbying and advocating for debt relief and concessionary loans, strengthening climate-smart innovations and early warning systems.

Keywords: *Climate Change, Public Debt, Zimbabwe*

1 Introduction

Governments usually borrow when their revenues exceed their total expenditure (Oshewolo & Oshewolo, 2021). While borrowing for financing infrastructure and development initiatives is critical to fostering private investment and economic growth, odious debt and public debt accrued without proper intention for investment may result in high-interest payments and an unsustainable debt burden (Joy & Panda, 2021). Zimbabwe's public debt has reached unprecedented levels compared to other developing countries, and the country is now categorized as "in debt distress" (Republic of Zimbabwe, 2021; World Bank, 2020, p. 62). The mounting public debt levels in Zimbabwe are increasing uncertainty, crowding out potential private-sector investment, stifling economic growth, and placing the country's Sustainable Development Goals (SDGs) out of reach (World Bank, 2020). Climatic shocks such as protracted droughts, cyclones, and floods axiomatically contribute to Zimbabwe's increasing public expenditure (UNDP, 2017). Zimbabwe remains constrained from accessing external financing due to the continued accumulation of external debt arrears; therefore, domestic financial markets remain the primary source of budget financing for the Treasury. According to the 2025 budget statement, domestic public debt amounted to ZIG $218 billion (USD 1= ZIG 26.5 as of 19 February 2025), while external public debt breached the thresholds in both the baseline and shock scenarios, amounting to ZIG 307 billion (Republic of Zimbabwe, 2024). Debt sustainability requires concerted efforts to implement a cocktail of measures, including climate change mitigation and adaptation, avoiding odious debt, ending all quasi-fiscal programs

resulting in a high debt burden, and negotiating with creditors on debt and arrears clearance.

This study examined the impact of climate change on public debt in Zimbabwe. It assumed that addressing climate change has the potential to reduce loss of government revenue, reduce public spending associated with infrastructure damage and food imports, improve food and nutrition security, enhance livelihood strategies for poor people, and ultimately promote the achievement of several SDGs (Bachner & Bednar-Friedl, 2019). Zimbabwe's government is under intense pressure to clear its foreign and domestic debt burden, with much of the debt being regarded as odious because it has not benefited the country's general population (Chilunjika et al., 2016; Zhou, 2020).

Developing countries, especially those in sub-Saharan Africa, are more vulnerable to climate change and variable weather patterns than the rest due to their low adaptive capacity. Zimbabwe is one of the worst countries affected due to its widespread poverty and poor governance and its derivatives: weak legal and institutional architecture, lack of adequate budgetary support, lack of recent technology and dilapidated infrastructure, environmental degradation, natural disasters, and conflicts (UNDP, 2017). To add to the woes, climate-related shocks (e.g., cyclones, droughts, and floods) and temperature and rainfall variations negatively impact public debt, rebuilding damaged infrastructure and increasing food imports (UNCTAD, 2022). The impacts on food and nutrition security include decreased food access, decreased dietary diversity, and decreased nutritional content (Tanyanyiwa & Mufunda, 2020). Climate change and other shocks like the recent COVID-19 pandemic represent a systematic risk to the Zimbabwean economy, triggering a cycle that depresses government revenue, increases public spending, and induces public debt (Kellner & Runkel, 2020). A better appreciation of the connection between climate change and public debt is essential in designing effective solutions to enhance economic growth and ensure that people can access adequate, safe, and nutritious food (Fanzo et al., 2018).

The structure of this paper is as follows: the theoretical framework is presented next, together with the literature review, followed by the methodology section. Section 4 discusses the findings and presents a proposed conceptual framework, while section 5 provides the concluding remarks.

2 Theoretical Framework

Modern public debt theorists believe governments borrow for good reasons (Ncanywa & Masoga, 2018). For instance, if the state borrows to invest in roads, bridges, and broadband, among other capital assets, it is permissible because it enhances economic growth and national development (Benzecry & Smith, 2023). For these theorists, borrowing to finance productive public investments obliges taxpayers to pay more taxes now or in the future (Wray & Nersisyan, 2020). Proponents of the modern public debt understanding argue that it is an essential means of increasing employment in a modern economy, as it concerns macroeconomic variables rather than individual utilities (Salsman, 2017). Therefore, states may borrow in times of need as they deem necessary. However, as portrayed by the modern public debt theory, public debt may only reap benefits if a country's economy uses the debt to generate more than it borrowed (Okan, 2023). In an environment where an economy produces less than borrowed, the inverse may be true, resulting in debt default.

Consequently, this research was premised on the mainstream classical theories of public debt. It was rooted in the work of Adam Smith and Thomas Jefferson, believed to be key examples of public debt pessimists prior to David Ricardo and other classical economists (Holtfrerich, 2014). At the heart of the early classical theorists' notions is that public debt is always wasteful, devastating to economic growth and national prosperity, and is even morally unacceptable and unjust. According to the classical school of thought, government borrowing obstructs economic development and must be avoided. In his thesis, *The Wealth of Nations,* which was published in 1776, the British economist Adam Smith warned that "enormous government debts presently oppress, and will in the long run probably ruin, all the great nations of Europe" (Dyson, 2014, p. 73). Writing shortly after Adam Smith in 1816, Thomas Jefferson (the third president of the United States) warned that "the principle of spending money to be paid by future generations, in the context of government borrowing, is but deceitful to the future on a greater extent simply because generations to come must pay taxes to finance the state's interest payments on government debt, leaving them with less disposable income with which to put food on the table and invest in commercial and industrial ventures" (Sloan, 2001, p. 4).

3 Literature Review

3.1 Defining key terms

Public debt (usually called government debt) refers to the aggregate amount, including total liabilities, borrowed by the government externally or domestically to finance its development budget. In 2012, the International Monetary Fund (IFM) provided a more refined definition, indicating that public debt refers to the "gross general government debt" expressed as a percentage of GDP (Elberry et al., 2023, p. 351). On the other hand, climate change has become a buzz term in development literature (Van Berkum et al., 2018). Article 1 of the United Nations Framework Convention on Climate Change (UNFCCC) defines climate change as "the change of climate that is attributed directly or indirectly to human activity that alters the composition of the global atmosphere, and that is in addition to natural climate variability observed over comparable time periods.". Climate change and variable weather patterns affect essentially all elements of the food systems due to their negative impacts on the environment, infrastructures, and production, among others, and this has negative implications on public expenditure and, ultimately, national (public) debt (Fanzo et al., 2018).

3.2 Understanding the nexus between climate change and public debt

Climate change has multiple socio-economic implications, mainly because it affects essential economic sectors (such as infrastructure, agriculture, energy, and health) and negatively affects the provision of goods and services (Fanzo et al., 2018). In recent years, climate change has been associated with deleterious effects such as droughts, cyclones, floods and hailstorms, which affect agriculture production and damage infrastructure (human settlements, roads, power lines, etc.), resulting in increased public spending to assist affected communities and rebuilding infrastructure (Fanzo et al., 2018; Muchuru & Nhamo, 2019). In support, Tirivangasi & Nyahunda (2019) argue that climate change negatively impacts the overall macroeconomic environment. Ultimately, climate change negatively impacts public budgets due to increasing demand for safety nets and infrastructure repairs, consequently leading to rising public debt (Kellner & Runkel, 2020; Muchuru & Nhamo, 2019). Zenios (2021) concurs that the negative impact of climate change on the socio-economic situation of a country is likely to have profound implications

for the fiscal sustainability of the nation's budgets in the medium to long term, as it shrinks the tax base, hence lowering tax revenues and increasing fiscal imbalances. Fiscal deficits and increased public expenditure emanating from climate change, in most cases, lead to the government exploring more funding options, and domestic and external borrowing is the usual option, resulting in increased public debt (Batten, 2018).

3.3. Climate change risks and debt sustainability

The negative impact of climate change on key economic sectors and, ultimately, public debt can be grouped into two main categories: physical and transition risks. The physical risks are the negative results on the environment, while the transition risks refer to the results of the policies to mitigate the impact of climate change (Zenios, 2021). Assuming that climate change's physical and transition risks are known, its effects are more pronounced through the three key government roles as coined by Musgrave in his 1939 paper on the Voluntary Exchange Theory of Public Economy: resource allocation, redistribution, and stabilization. Implementing these three functions of the state results in limited fiscal space, which in most cases leads to increased domestic and external borrowing (Pasimeni & Riso, 2019).

Physical risks arise from floods, storms, and other weather-related events that damage physical capital, natural resources, labour productivity, or trade (Kellner & Runkel, 2020). Although climate change has mixed environmental influences, its adverse impact is more pronounced than positive ones. The Intergovernmental Panel on Climate Change (IPCC, 2019) reveals that global surface temperature risks the entire food system value chain, negatively impacting infrastructure, human, livelihood, and health ecosystems. Climate change leads to damage to infrastructure from weather-related events such as hailstorms, cyclones, or floods. In addition, climate change may cause droughts, which may have deleterious effects on the availability, access to, and cost of water, as well as general food and nutrition security. Ultimately, droughts can hamper hydropower generation and the stability of agricultural production, adversely affecting the sources of livelihoods (Rendall, 2021). Both physical and transition risks of climate change depress government revenues, increase public spending, and increase public debt (Mitchell, 2015).

Figure 1 below shows the connection between climate change and public debt. The green climate elements indicate chronic and acute

changes, and these variations produce physical risks. People adapt to physical risks, for example, by improving infrastructure or adjusting their public health amenities. Adaptation to climate change, however, involves government expenditure and buffering against economic disruptions. Communities also strive to reduce climate change's acute and chronic effects through mitigation policies, such as migrating to a low-carbon economy and controlling natural resource usage. Mitigation and adaptation policy components may have short or long prospects, but their effects are usually long-term. As a rule, the consequences of mitigation and adaptation policies increase the fiscal burdens when executed, but with positive long-term economic growth results. In this way, the policy units feed into the economic modules in that physical and transition risks, curbed by adaptation and mitigation policies, pass on to the public debt analysis.

3.4. Climate change and public debt: regional and international experiences

Box 1 and 2 below offer an in-depth description of countries' experiences in responding to the adverse effects of climate change and public debt. Box 1 gives the Mozambican experience in dealing with climate-related shocks, particularly during Cyclone Idai, while Box 2 describes how Indonesia responded to protracted climate-induced disasters like tsunamis.

Box 1: *The Mozambique cyclone disaster*

Mozambique, the sixth-poorest country in the world, currently experiences unsustainable public debts, mainly due to weather-related disasters. In 2019, Mozambique, Zimbabwe, and Malawi were affected by Cyclone Idai, one of the most severe tropical cyclones in history to affect Africa and the Southern Hemisphere. Cyclone Idai triggered catastrophic destruction and a humanitarian disaster, resulting in more than 1,300 deaths and many people missing (Charrua et al., 2021). Throughout Mozambique, Idai killed at least 602 people, injured 1,641 people, and inflicted an estimated US$773 million in damage.

Nation	Fatalities	Missing	Injuries	Affected	Damage in US$ in 2019
Mozambique	602	2,000	1,641	1,850,000	$773 million
Totals for all countries affected by Cyclone Idai	1,297	> 2,262	> 2,450	3,044,000	≥$2 billion

To mitigate the effects of the cyclone, Mozambique incurred loans from international financial institutions (IFIs) and bilateral and multilateral institutions, and recently also, the country borrowed funds to cope with the COVID-19 pandemic (Ripoll & Jones, 2019). However, some of the loans accrued by Mozambique before and after Cyclone Idai were regarded as odious debts because they did not benefit ordinary citizens and were contracted without following borrowing procedures. The IMF and other financial institutions consider this Southern African country to be in debt distress.

Source: Authors compilation based on (UNDP,2019)

Box 2: *The Indonesian Tsunami catastrophe*

The tsunami catastrophe that occurred on 26 December 2004 in the Indian Ocean is one of the worst natural disasters in recent decades and caused approximately 200,000 deaths and destroyed the homes and livelihoods of 1.5 million people, with a total loss of approximately US$7 billion. Indonesia is one of the countries susceptible to climate-related disasters. In 2018, several major earthquakes and tsunamis occurred, striking several provinces in the country (Omira et al., 2019). According to the World Bank's preliminary damage needs report of 2018, the geospatial extent of the destruction and the approximate cost of the infrastructure and damage to residential and non-residential property as a result of a tsunami in Sulawesi (one of the main islands of Indonesia) was estimated to be around US$531 million (IDR 8.07 trillion), disaggregated as follows:

Residential housing – US$181 million (IDR 2.75 trillion)

Non-residential sector – approximately US$185 million (IDR 2.82 trillion)

Infrastructure – approximately US$165M (IDR 2.5 trillion) (World Bank, 2018a).
While the preliminary report by the World Bank estimated the initial economic damage based on empirical, fiscal, and engineering assessments, it did not include deaths, damaged land, or economic disruption in the context of employment, business, and livelihood loss. Indonesia's public debt is mounting due to the loans accrued to finance the reconstruction of damaged infrastructure and strengthen monitoring and early warning systems. For instance, the World Bank 2018 announced a US$1-billion loan to the government of Indonesia for relief and reconstruction after the tsunami, and the total public debt to GDP increased to 38.50 per cent in 2020 from 30.50 per cent in 2019 (World Bank, 2018b).

Key: The Indonesian rupiah (IDR)
Source: Authors' compilation based on (World Bank, 2018a)

4. Methodology And Data Collection

This study primarily adopted an exploratory design (hay et al.,2020). Purposive sampling was adopted, and the researchers first identified and selected data sources relevant to the research objectives. The initial exercise involved a desk review of the implications of climate change on public debt in zimbabwe. The desk review included a review of literature, legal and institutional frameworks, and other policy documents underpinning the impact of climate change on public debt in zimbabwe.

The second step was data collection from 15 purposively sampled key informants for interviews, which was the point where data saturation was reached. Data saturation is the point in research where enough data has been collected to draw the necessary conclusions. Any further data collection will not produce value-added insights (hennink & kaiser, 2022). Hennink and kaiser (2022) found 12 to 13 interviews sufficient to reach data saturation in a qualitative study. After the data collection, the researchers started the data analysis process with data transcription, particularly of the data collected in vernacular languages into english. Thematic analysis was used to analyze the collected data.

5. Results And Discussion

This section presents the findings of the study. While many governments worldwide are interested in analyzing the fiscal consequences of climate change, there are considerable challenges to a more organized, quantified, and systematic way of understanding the impacts of climate change on public debt. The findings from the document analysis and key informant interviews are presented here.

5.1 Document analysis

It was established through document analysis that Zimbabwe experienced several climate-related disasters. Climate-related shocks that affected Zimbabwe from 1900 to 2017 include seven drought events, 22 epidemic episodes, 12 floods, and five storms, which resulted in the deaths of 7,000 people, with more than 20 million people affected and total damage estimated at US$950 million (World Bank, 2020). Zimbabwe has been prone to climate-induced droughts, which seriously impact the country's GDP growth and general macroeconomic environment. For example, Zimbabwe and the rest of Southern Africa, except for Namibia, endured the worst drought recorded in 1992 (Lenneiye, 2000). According to the World Bank, the drought of 1992 caused a declining growth rate in GDP in 1992 and 1993 of 6.8 per cent as well as a decline of 31 per cent in agricultural production; this negatively impacted the macroeconomic situation of Zimbabwe, causing hunger and malnutrition (World Bank, 1996). During the 1992 drought, the Zimbabwean government incurred unplanned budget expenses of over Z$1 billion in drought relief (particularly on food imports), and as a result, its public debt increased from 54.9 per cent of GDP in 1991 to 59.3 per cent of GDP in 1992 (Lenneiye, 2000). The 1992 drought negatively impacted the ability of the Zimbabwean government to repay the loans accrued from IFIs like the IMF and the World Bank. It destabilized the implementation of the Economic Structural Adjustment Programme, a market-oriented strategy to re-orient the economy to producing tradable goods by abandoning the highly interventionist approach adopted by the government since independence in 1980 (Marquette, 1997).

In addition, Zimbabwe and other countries in Southern Africa were devastated by an El Niño-induced drought in 2015 and 2016, considered the worst since 1992 (ZRBF, 2016). The 2023-2024 El Niño cycle that affected Zimbabwe and most countries in Southern Africa led to below-

average rainfall and abnormally high temperatures, resulting in severely reduced agricultural production, drought-related livestock deaths, declining dam levels, and reduced availability of potable water (Mugiyo et al., 2023).

5.1.1 Key legal frameworks for mitigating the effects of climate change in Zimbabwe

Sustainable Development Goals

Zimbabwe is a signatory to the SDGs, a collection of 17 interlinked global developmental targets designed to serve as a shared blueprint for peace and prosperity for people and the planet now and into the future (Tinarwo, 2023). Formulated in 2015 by the United Nations General Assembly, the SDGs are part of the Post-2015 Development Agenda that sought to create a future global development framework to succeed the Millennium Development Goals, which were implemented for 15 years, between 2000 and 2015 (Caballero, 2019). At the heart of the SDGs is SDG 13, which is to take urgent action to combat climate change and its impacts. Despite the commitment to combat climate change as reflected in the SDGs, Zimbabwe was ranked very high (in the top three in Southern Africa) in the 2021 Global Climate Risk Index, indicating that the effects of climate change were rife and remained a national issue to this country (Chirisa et al., 2021).

Paris Agreement

Zimbabwe's government must adhere to the Paris Agreement (Bodansky, 2016). This was adopted in December 2015 to reduce the emissions of gases that contribute to global warming (Oberthür & Groen, 2018). Set out to improve upon and replace the Kyoto Protocol (COP3) of 1997, an earlier international treaty designed to curb the release of greenhouse gases, the Paris Agreement commits the parties (including Zimbabwe) to ensure that the rise in global temperature this century is kept below 2°C, above pre-industrial levels, and to drive efforts to limit the temperature increase to 1.5°C (Boyle, 2018).

However, the low budgetary support provided by the Zimbabwean government to institutions responsible for climate change mitigation stifles efforts to reduce greenhouse gas emissions (UNDP, 2017). Consequently, the Zimbabwean government has been unable to meet its national objectives and global obligations to lower its greenhouse emissions in line with the country's commitment to the Paris Agreement

(Murombo et al., 2019). Moreover, Zimbabwe's national capacity to measure and report on the country's progress toward meeting the national emission reduction target is still weak and needs to be strengthened (Chanza, 2018).

Climate Change Policy

Like many other nations, Zimbabwe crafted its Climate Change Policy in 2017 to establish the legal structures to regulate businesses on climate-related matters and enable them to reduce their greenhouse gas emissions (Tirivangasi & Nyahunda, 2019). The Climate Policy for Zimbabwe focuses on ways to promote climate adaptation in the context of sustainable agriculture, especially in rural communities. This policy builds upon the efforts of the Climate Change Response Strategy 2014, which sought to provide a coordinated way to address the negative impacts of climate change in Zimbabwe (Chirisa et al., 2021).

National Development Strategy 1

The National Development Strategy (NDS) 1 is Zimbabwe's current blueprint for 2021–2025, primarily supporting macroeconomic growth and climate change mitigation and adaptation efforts (Nhapi, 2022). The NDS1 outlines a shared vision for accelerating climate action and nature-based approaches, imperative for resilience and long-term sustainable growth and development (Tinarwo, 2023). Furthermore, the NDS1 identifies environmental protection, climate resilience, natural resource management, and infrastructure and utilities (energy, water, and transport) among its key priorities. The thrust of environmental protection, climate resilience, and natural resource management under the key priorities of NDS1 focus on sustainable management of wetlands, rehabilitation of mined areas, climate-change mitigation, and sustainable natural resource management (Moyo, 2023). Climate change is mainstreamed in all government planning and budgeting processes to achieve the above key priorities. However, implementing the NDS1 has experienced inadequate budgetary support due to the persistent macroeconomic challenges in Zimbabwe (Tirivangasi et al., 2023).

Zimbabwean Low Emissions Development Strategy

The government of Zimbabwe, in response to the negative impacts of climate change, developed the long-term Low Greenhouse Gas Emission

Development Strategy (LEDS) and the attendant Measurement, Reporting, and Verification Framework for the period 2020 to 2050 (Chirisa et al., 2021). The LEDS is Zimbabwe's response to the call of the United Nations Framework Convention on Climate Change and its conventions, the Kyoto Protocol of 1997 and the Paris Agreement of 2015, towards achieving stabilization of greenhouse gas concentrations in the atmosphere at a level to prevent dangerous anthropogenetic interference with the climate system (Tirivangasi et al., 2023). Key objectives of the Zimbabwean LEDS include implementing renewable energy and energy efficiency initiatives, climate-smart agricultural practices, low-carbon transport systems, sustainable forest management, solid waste management, and sustainable industrial development. Despite the commitments to reduce greenhouse gas emissions into the atmosphere as reflected in the LEDS and other protocols, Zimbabwe still depends considerably on fossil fuels, particularly coal, and investments in renewable energy are still meagre (Chirisa et al., 2021).

5.1.2 Institutional arrangements for climate change and public debt in Zimbabwe

Ministry of Environment, Climate, Tourism and Hospitality Industry (MECTHI)

The Climate Change Management Department (CCMD), under the Zimbabwean MECTHI, is primarily responsible for fostering the coordination of all climate-related issues (Tirivangasi et al., 2023). The primary responsibility of the CCMD is to coordinate the implementation of climate action initiatives in Zimbabwe, particularly adaptation and mitigation (Mushawemhuka et al., 2022). The CCMD works with a broad range of state and non-state actors to coordinate mainstream measures against climate change across different sectors of the economy. Moreover, the CCMD is responsible for policy formulation of all climate-related legislative frameworks to enable the operationalization of national mitigation and adaptation strategies and plans. Notwithstanding the paltry budget allocation of the MECTHI as compared to other government ministries, there is a lack of coordination and harmonization in the statutory and legal frameworks formulated by the government of Zimbabwe, with some requiring alignment with current international best practices (Murombo et al., 2019).

Ministry of Finance and Economic Development (MoFED)

The MoFED plays a crucial role in the coordination and resource mobilization for projects and programs related to climate action as they

are implemented by the key government ministries, departments, and agencies, as well as other stakeholders such as development partners and the private sector, and civil society organizations (Tirivangasi & Nyahunda, 2019). However, domestically mobilized climate finance from the Zimbabwean government cannot finance climate action projects and programs. Usually, government institutions rely on external financing, mainly from donor agencies. In addition, there is a slow disbursement of government financial resources mobilized by the treasury to the state-led implementing ministries, departments, and agencies (Chirisa et al., 2021).

Development Partners

Various development partners are working on climate change issues in Zimbabwe. For instance, the United States Agency for International Development remains the most significant bilateral donor to fund climate resilience-building initiatives in Zimbabwe's rural and urban areas. Similarly, the United Nations entities are guided by the Zimbabwe United Nations Development Assistance Framework, a strategic document used to channel their support to the achievement of the SDGs (including SDG 13 on climate change) in Zimbabwe (Mushawemhuka et al., 2022). The United Nations also supports the Zimbabwean government in regularly monitoring and reporting progress toward achieving SDGs at national and subnational levels (Nhapi, 2022). In addition, the United Nations regularly facilitates national and local consultations and advocacy campaigns in partnership with the Office of the President and Cabinet, government ministries and departments, and other stakeholders on mainstreaming and implementing the SDGs (Nhapi, 2022). However, while development partners play a crucial role in climate action in Zimbabwe, their work is complicated by the duplication of roles and poor coordination. Moreover, the poor international relations between the government of Zimbabwe and traditional donor countries like the United States and the United Kingdom have witnessed reduced development aid to the country (Nyahunda et al., 2022).

5.2 Key Informant Interviews

In this research, we sought to answer the following questions: (1) What is known about the association between climate change and public debt? (2) What is the impact of climate change on public debt? (3) What can be done to reduce the impact of climate change on public debt? In

answering the above questions, 15 key informant interviews (KIIs) were conducted with senior managers and experts from the government (3), development partners (2), civil society (3), research organizations (2), academia (4) and the private sector (1), whose work involved climate change or public debt, from the two provinces in Zimbabwe (Harare and Masvingo provinces). The KIIs were conducted virtually for those who had access to the internet; for those without access to the internet, telephone or face-to-face interviews were done. The 15 KIIs conducted indicated that climate change negatively impacted public debt because of its effects on the entire food system value chain, from infrastructure, environment, people, production, institutions, etc. The thematic analysis conducted by the authors after the KIIs generated the following themes.

Debt relief and concessionary loans

The interviews highlighted that it is important for debt-trapped and poor countries like Zimbabwe to lobby and advocate for debt relief and concessionary loans from bilateral and multilateral partners to compensate for the adverse effects of global warming that these countries had little role in producing. In addition, supporting the developing countries in the mitigation and adaptation efforts could result in sustainable climate action, especially for the debt-trapped nations. The governments must recognize the existence of a climate debt – in addition to a historical, financial, ecological, and social debt—that the Global North owes to the Global South. In 2022, at the COP 27 climate summit in Egypt, developed countries pledged to compensate developing countries for the loss and damage caused by global warming. This climate compensation support could be in unconditional debt relief and concessionary funding to ensure their debt burden does not reach unsustainable levels.

However, sustainable debt relief efforts require borrowers, lenders, and donors to promote prudent borrowing, investment, and economic growth and denounce developing countries' accruing of odious debt. For instance, lenders and IFIs should take immediate action to implement ambitious unconditional debt cancellation of unsustainable and illegitimate debts, particularly those generated by funding fossil fuel projects, to enable the making of sovereign and participatory policy decisions that meet human and nature rights responsibilities in debt-prone countries.

Strengthen early warning systems

Results from the key informants noted that it was important for Zimbabwe to strengthen its early warning systems as an adaptive measure to deal with the negative impacts of climate change. It was highlighted that the Zimbabwean government should make efforts to use integrated information systems to help the communities prepare for climate-related disasters. While the efforts by the Famine Early Warning Systems Network in working with the government and other development partners are laudable, it would be most appropriate if the government led such efforts to ensure the sustainability of the system.
The protracted nature and magnitude of weather-related catastrophes underscore the urgent need for Zimbabwe and other disaster-prone countries to improve investment and strengthen early warning systems as prevention and response mechanisms to deal with the negative effects of climate change. The use of digital technologies has the potential to coordinate and harmonize the diverse information systems of many stakeholders involved in fighting climate change. Weather-related information systems need to be strengthened and made inclusive of all stakeholders. For instance, in the efforts to respond to droughts and other climatic shocks, the Zimbabwean government's partnerships with international institutions like the Famine Early Warning Systems Network, World Food Programme (WFP), and Food and Agriculture Organization are commendable; nevertheless, duties and responsibilities need to be specified to circumvent duplication. The involvement of organizations working with communities in collecting data at the subnational level needs to be harnessed, as these stakeholders have the strength to work with people.

Domestic and international climate risk financing and insurance schemes

Finally, KIIs indicated that since Zimbabwe is prone to many weather-related disasters, it is important that the government considers both domestic and international climate risk financing and insurance schemes to cushion communities after a disaster. However, when countries establish climate risk insurance, they must be transparent and inclusive of all the stakeholders. Key informants also noted that Zimbabwe should focus on strengthening domestic climate risk insurance schemes, as international schemes, on average, cover an insignificant percentage of the total disaster.

Climate risk financing and insurance are important strategies for cushioning people against climate-related catastrophes and damage. The Zimbabwean government could consider domestic and international climate risk financing and insurance measures to protect people from economic loss due to climate change and variable weather patterns. For instance, the African Risk Capacity is a technical arm of the African Union created to assist African governments in strengthening their capacities to plan, prepare for, and respond to disasters and events related to climate change. It paid US$1.4 million to the government of Zimbabwe and US$290,288 to the WFP in 2020 to respond to the extreme drought in the country (WFP, 2020).

Strengthen multi-stakeholder and multi-sectoral coordination

While efforts to fight climate change in Zimbabwe were commended, several interviewees indicated they lacked coordination and harmonization. For instance, the key informants indicated that the institutional framework to fight climate change in Zimbabwe comprises a complex web of relationships among the diverse stakeholders within and among government ministries and departments, development partners, think tanks, and non-governmental organizations (NGOs). However, this has caused weak inter-sectoral mechanisms and fragmentation and duplication of roles and responsibilities by these stakeholders at both national and subnational levels. For example, climate change issues are coordinated by the Ministry of Environment and Climate Change, while the Ministry of Labour and Social Welfare coordinates responses to drought issues. The Civil Protection Unit (CPU) in the Ministry of Local Government, Public Works, and National Housing is responsible for multi-sectoral coordination in disaster response, including climate-induced catastrophes. The CPU, however, lacks the human and institutional capacity and adequate budgetary support to effectively coordinate stakeholders and respond to climate change and other disasters.

There is an urgent need to strengthen multi-stakeholder partnerships (MSPs) and multi-sectoral approaches between the diverse actors fighting climate change and debt justice by providing policy and pragmatic solutions. The involvement of the private sector, think tanks, academia, and civil society in the fight against climate change and debt is still ad hoc and limited. Supporting and encouraging the participation of these stakeholders in a structured manner and assigning them responsibilities could promote downward accountability and increase transparency,

particularly in the borrowing process. Expanding the partnerships to include more sectors and players representing diverse stakeholders would increase efforts to fight climate change and public debt and make the process more inclusive. A single entity coordinating the various governmental and non-governmental actors in fighting climate change will be most appropriate in Zimbabwe.

Moreover, governments and international organizations should focus on actions that address the root causes and historical responsibilities for the present climate and debt emergencies. People´s rights to participate in and control the decision-making and implementation of policies to ensure a just and inclusive transition to a sustainable economy must be guaranteed. Several initiatives are being discussed, such as debt-for-climate swaps and market-based solutions like green and nature-performance bonds that are unlikely to generate fair outcomes and could add to the debt burden of climate-vulnerable countries.

Lack of adequate budgetary support

KIIs noted that institutions involved in climate action are poorly funded, particularly government ministries and departments, mainly because of the protracted macroeconomic challenges for the country. Inadequate budgetary support is one of the most significant constraints Zimbabwe and many other poor countries face in fighting climate change and ensuring debt sustainability. There is a need for urgent delivery of new and additional non-debt-creating climate finance beyond the unfulfilled US$100 billion per year (the amount rich countries pledged to support climate change activities to developing countries) target that is sufficient and responsive to the climate mitigation adaptation and loss as well as the damage needs of the peoples and communities of the Global South. Several poor and fragile countries rely on donor support to fight climate change, which is not sustainable. Additionally, countries must reinforce and foster domestic resource mobilization to guarantee adequate budgetary support in responding to climate change's negative effects and ensure sustainability on public debt. Where possible, countries should tap into the potential of public-private partnerships to increase domestic resource mobilization.

Capacity-building initiatives to fight climate change and public debt in Zimbabwe

Finally, the interviews highlighted that state and non-state actors lacked the requisite human and institutional capacity to deal with climate change

and public debt. Therefore, building human and institutional capacity to work on climate change and public debt issues is crucial, especially in government ministries, departments, and local NGOs. Indeed, rolling training initiatives are important to equip the people working on climate change and public debt issues with the requisite skills and technical capability. Organizational capacity building is also critical to implementing government policies and programs effectively. For example, government ministries and departments working on climate change and public debt should be supported with adequate resources to carry out their duties effectively. Governments and international organizations should promote an open review of the approach to debt sustainability, with United Nations guidance and civil society participation, to move towards a debt sustainability concept that has at its core environmental and climate vulnerabilities, together with human rights and other social, gender, and development considerations. Debt cannot be considered sustainable if its payment prevents a country from affording climate resilience plans.

resilience plans.

6. Proposed Conceptual Framework For Addressing The Impact Of Climate Change On Public Debt

Based on the findings from the documents and kiis, a conceptual framework for addressing the impact of climate change on public debt was developed, as presented in figure 1. Debt relief and concessionary funding are crucial. Poor and fragile countries like zimbabwe could consider lobbying for debt relief and concessionary funding since climate change and other shocks exert pressure on national budgets and increase public debt. There are also colossal transparency and accountability issues regarding zimbabwe's debt, especially on loans obtained from china, and this has been a significant setback with the various debt resolution strategies. Zimbabwe must also ensure that robust legal and institutional frameworks are in place. The current governance architecture of climate change is marked by fragmentation, lack of harmonization, and duplication of responsibilities among the stakeholders. Strengthening early warning systems to predict the occurrence of disasters related to climate change is also crucial to reducing the impact of climate change on public debt. In addition, climate risk insurance should be put in place to cushion the people

against disasters induced by climate change. Msps and multi-sectoral approaches to deal with the impact of climate change on public debt are also key. Lastly, human and institutional capacity building (including adequate budgetary support to the institutions involved in the fight against climate change) should be prioritized. To supplement donor funding and limited budgets from the treasury, the zimbabwean government should strengthen private-sector investment through initiatives such as public-private partnerships in its mitigation and adaptation efforts.

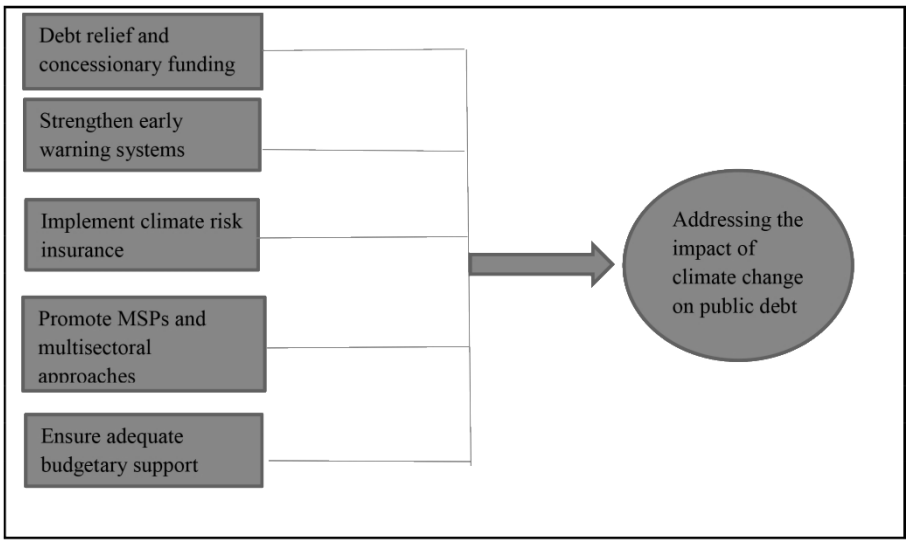

Figure 1: *Proposed conceptual framework to reduce the impact of climate change on public debt in Zimbabwe*

7 Conclusions

Some may view the classical theories of public debt as archaic and redundant. However, the relevant economic environment and its government practices need to be considered in the decision on the most appropriate lens for viewing public debt. In zimbabwe, unstainable public debt spells disaster for the country's people. Climate change mitigation and adaptation could increase government revenue, decrease public spending, and ultimately lead to debt sustainability in zimbabwe. However, addressing the impacts of climate change is not a magic bullet. Zimbabwe must strengthen its climate change early warning systems, consider domestic and international climate risk insurance, and lobby for

debt relief and concessionary loans from creditors and ifis. Other challenges for climate action in zimbabwe include a lack of adequate budgetary support, weak human and institutional capacity, poor coordination and harmonization, and duplication of roles and responsibilities among the stakeholders involved in the fight against climate change. Mitigating these challenges demands concerted efforts from all the stakeholders, including tapping into the potential of private-sector investment in the climate action process. Human and institutional capacity building and adequate budgetary support to complement donor funding are critical factors in addressing the impacts of climate change on public debt in zimbabwe.

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References

Bachner, G., & Bednar-Friedl, B. (2019). The effects of climate change impacts on public budgets and implications of fiscal counterbalancin g instruments. *Environmental Modeling & Assessment*, *24*(2), 121–142.

Batten, S. (2018). Climate change and the macro-economy: a critical review. Available at: https://papers.ssrn.com/sol3/papers.cfm?abstr act_id=3104554. (Accessed on 12 August 2021).

Benzecry, G. F., & Smith, D. J. (2024). The wisdom of classical political economy in economics: incorporated or lost? *The Review of Austrian Economics*, *37*(2), 133–152.

Bodansky, D. (2016). The Paris climate change agreement: a new hope? *American Journal of International Law*, *110*(2), 288–319.

Boyle, A. (2018). Climate change, the Paris Agreement and human rights. *International & Comparative Law Quarterly*, *67*(4), 759–777.

Caballero, P. (2019). The SDGs: changing how development is understood. *Global Policy*, *10*, 138-140.

Chanza, N. (2018). Limits to Climate Change Adaptation in Zimbabwe: Insights, Experiences and Lessons. In: Leal Filho, W., Nalau, J. (eds) Limits to Climate Change Adaptation. Climate Change Management. Springer, Cham. https://doi.org/10.1007/978-3-319-64599-5_6

Charrua, A. B., Padmanaban, R., Cabral, P., Bandeira, S., & Romeiras, M. M. (2021). Impacts of the Tropical Cyclone Idai in Mozambique: a

multi-temporal Landsat satellite imagery analysis. *Remote Sensing*, *13*(2) , 201.

Chilunjika, A., Chikova, R. and Uwiyizeyimana, D. (2016). Reflections on the constitutional legal debt management frameworks in Zimbabwe. Available at: https://www.researchgate.net/profile/Dominique_Uwizeyimana/publication/323389453_Refl. (Accessed on 9 September 2021).

Chirisa, I., Gumbo, T., Gundu-Jakarasi, V. N., Zhakata, W., Karakadzai, T., Dipura, R., & Moyo, T. (2021). Interrogating climate adaptation financing in Zimbabwe: proposed direction. *Sustainability*, *13*(12), 1–20.

Dyson, K. (2014). *States, debt, and power: 'saints' and 'sinners' in European history and integration*. Oxford, OUP.

Elberry, N. A., Naert, F., & Goeminne, S. (2023). Optimal public debt composition during debt crises: a review of theoretical literature. *Journal of Economic Surveys*, *37*(2), 351–376.

Fanzo, J., Davis, C., McLaren, R., & Choufani, J. (2018). The effect of climate change across food systems: implications for nutrition outcomes. *Global Food Security*, *18*, 12–19.

Hay, L., Duffy, A. H., Grealy, M., Tahsiri, M., McTeague, C., & Vuletic, T. (2020). A novel systematic approach for analysing exploratory design ideation. *Journal of Engineering Design*, *31*(3), 127–149.

Hennink, M., & Kaiser, B. N. (2022). Sample sizes for saturation in qualitative research: a systematic review of empirical tests. *Social Science & Medicine*, *292*, 114523. Available at: https://doi.org/10.1016/j.socscimed.2021.114523. (Accessed on 15 August 2021).

Holtfrerich, C. L. (2014). Public debt in post-1850 German economic thought vis-à-vis the pre-1850 British classical school. *German Economic Review*, *15*(1), 62–83.

Intergovernmental Panel on Climate Change (IPCC). (2019). Special Report on the Ocean and Cryosphere in a Changing Climate. Available at: https://www.unep.org/resources/report/ipcc-special-report-oce. (Accessed on 12 August 2021).

Joy, J., & Panda, P. K. (2021). An empirical analysis of the sustainability of public debt among BRICS nations. *Journal of Public Affairs*, *21*(2), e2170.

Kellner, M., & Runkel, M. (2020). Climate policy and optimal public debt. Available at: https://papers.ssrn.com/sol3/papers. (Accessed on 13 August 2021).

Lenneiye, N.M. (2000). *Quest for a corporate African leadership: public sector case studies from Southern Africa*. Harare, Nehanda Publishers.

Marquette, C. M. (1997). Current poverty, structural adjustment, and drought in Zimbabwe. *World Development*, *25*(7), 1141-1149.

Mitchell, T. (2015). Debt swaps for climate change adaptation and mitigation: a commonwealth proposal. Available at https://www.oecd-ilibrary.org/content/paper/5js4t742. (Accessed on 12 August 2021).

Moyo, G. (2023). China's Expanding Footprint and Deepening Debt Crisis in Zimbabwe-From Robert Mugabe to Emmerson Mnangagwa . In: Moyo, G., Helliker, K. (eds) Making Politics in Zimbabwe's Second Republic. Advances in African Economic, Social and Political Development. Springer, Cham. https://doi.org/10.1007/978-3-031-30129-2_11.

Muchuru, S., & Nhamo, G. (2019). A review of climate change adaptation measures in the African crop sector. *Climate and Development*, *11*(10), 873–885.

Mugiyo, H., Magadzire, T., Choruma, D. J., Chimonyo, V. G. P., Manzou, R., Jiri, O., & Mabhaudhi, T. (2023). El Niño's effects on Southern African agriculture in 2023/24 and anticipatory action strategies to reduce the impacts in Zimbabwe. *Atmosphere*, *14*(11), 1692.

Murombo, T., Dhliwayo, M., & Dhlakama, T. (Eds.). (2019). *Climate change law in Zimbabwe: concepts and insights*. Sankt Augustine, Konrad Adenauer Foundation.

Mushawemhuka, W., Fitchett, J. M., & Hoogendoorn, G. (2022). Climate change and adaptation in the Zimbabwean nature-based tourism industry. *Anatolia*, 1–12.

Ncanywa, T., & Masoga, M. M. (2018). Can public debt stimulate public investment and economic growth in South Africa? *Cogent Economics & Finance*, *6*(1), 1516483. https://doi.org/10.1080/23322039.2018.1516483.

Nhapi, T. (2022). An exploration of the domains of the inequality trajectory in Zimbabwe. *Contemporary Social Science*, *17*(2), 84–98.

Nyahunda, L., Tirivangasi, H. M., & Mabila, T. E. (2022). Challenges faced by humanitarian organizations in rendering services in the aftermath of Cyclone Idai in Chimanimani, Zimbabwe. *Cogent Social Sciences*, *8*(1), 1–11.

Oberthür, S., & Groen, L. (2018). Explaining goal achievement in international negotiations: the EU and the Paris Agreement on climate change. *Journal of European Public Policy*, *25*(5), 708–727.

Okan, E. (2023). David Hume and Adam Smith on public debt and 'American affairs'. In *The Adam Smith Review* (pp. 123–146). Oxfordshire, Routledge.

Omira, R., Dogan, G. G., Hidayat, R., Husrin, S., Prasetya, G., Annunziato, A., ... & Yalciner, A. C. (2019). The September 28th, 2018, tsunami in Palu-Sulawesi, Indonesia: a post-event field survey. *Pure and Applied Geophysics*, *176*(4), 1379–1395.

Oshewolo, R., & Oshewolo, S. (2021). Debt crisis, structural reforms and debt relief. In *Nigerian Politics* (pp. 259–272). Springer, Cham.

Pasimeni, P., & Riso, S. (2019). Redistribution and stabilisation through the EU budget. *Economia Politica*, *36*(1), 111–138.

Rendall, M. (2021). Public debt and intergenerational ethics: how to fund a clean technology 'Apollo program'? *Climate Policy*, 1–7.

Republic of Zimbabwe. (2024). The 2025 Budget Statement for Zimbabwe. Available at: https://zimtreasury.co.zw/wp-content/uploads/2024/11/The-2025-National-Budget-Speech.pdf. (Accessed on 19 February 2025).

Ripoll, S., & Jones, T. (2019). The context of Sofala and Manica in relation to Cyclone Idai response in Mozambique. Available at: https://opendocs.ids.ac.uk/opendocs/bitstream. (Accessed on 12 August 2021).

Salsman, R. M. (2017). Classical theories of public debt. In *The Political Economy of Public Debt* (pp. 30–93). Cheltenham, Edward Elgar Publishing.

Sloan, H. E. (2001). *Principal and interest: Thomas Jefferson and the problem of debt*. Charlottesville, VA, University of Virginia Press.

Tanyanyiwa, V. I., & Mufunda, E. (2020). Sociocultural impact of climate change on women and the girl child in Domboshawa, Zimbabwe. *Climate Action*, 827–837.

Tinarwo, J. (2023). Strengthening local food systems in the context of COVID-19 pandemic: lessons from Zimbabwe. In: Chapungu, L., Chikodzi, D., Dube, K. (Eds) *COVID-19 in Zimbabwe*. Springer, Cham. Available at: https://doi.org/10.1007/978-3-031-21472-1_4. (Accessed on 14 August 2021).

Tinarwo, J, Babu, S. C. & Karunya, I. 2018. Improving food system governance: lessons from multi-stakeholder partnerships in Zimbabw e. IFPRI Discussion Paper. Available at: http://www.ifpri.org/publication/improving-food-system-resilience-through-better-governance-lessons-multistakehold. (Accessed on 14 August 2021).

Tirivangasi, H. M., & Nyahunda, L. (2019). Challenges faced by rural people in mitigating the effects of climate change in the Mazungunye

communal lands, Zimbabwe. *Jàmbá: Journal of Disaster Risk Studies*, *11*(1), 1–9.

Tirivangasi, H. M., Nyahunda, L., Mabila, T., & Zingwena, T. (2023). Exploring humanitarian response strategies in the aftermath of disasters induced by climate change in Zimbabwe. *Development Southern Africa*, *40*(2), 313–328.

United Nations Framework Convention on Climate Change (UNFCCC). A Brief Introduction to the Climate Change Convention. https://unfccc.int/resource/ccsites/zimbab/conven/text/art01.htm. (Accessed on 19 February 2025).

United Nations Conference on Trade and Development (UNCTAD). (2022). Tackling debt and climate challenges in tandem: a policy agenda. https://unctad.org/publication/tackling-debt-and-climate-challenges-tandem-policy-agenda#tab-2 (Accessed on 2 June 2023).

United Nations Development Programme (UNDP). (2019). *Mozambique Cyclone Idai Post-Disaster Needs Assessment*. https://www.undp.org/publications/mozambique-cyclone-idai-post-disaster-needs-assessment-pdnadna. (Accessed on 19 June 2021).

United Nations Development Programme (UNDP). (2017). The Zimbabwe Human Development Report. *Climate Change and Human Development: Towards Building a Climate Resilient Nation*. Harare.

Van Berkum, S., Dengerink, J., & Ruben, R. (2018). The food systems approach: sustainable solutions for a supply of healthy food. Available at: https://liabrary.wur.nl/WebQuery/werpubs/538076. (Accessed on 12 August 2021).

World Bank. (2018a). World Bank announces $1bn assistance for Indonesia natural disaster recovery and preparedness. Available at: https://www.worldbank.org/en/news/press-release/2018/10/14/world-bank-announces-assistance-for-indonesia-natural-disaster-recovery-and-preparedness. (Accessed on 15 August 2021).

World Bank. (2018b). World Bank's preliminary assessment of disaster affected areas in Central Sulawesi using the GRADE methodology. Available at: https://www.worldbank.org/en/country/indonesia/brief/dras-assessment-potential-media-enquiries (Accessed on 15 August 2021).

World Bank. (1996). Understanding poverty and human resources in Zimbabwe: Changes in the 1990s and directions for the future. Available at: http://documents1.worldbank.org/curated/en/495301468. (Accessed on 14 August 2021).

World Bank. (2020). Climate risk profile for Zimbabwe. Available at: https://climateknowledgeportal.worldbank.org/sites/default/files/2

020-06/14956-ZimbabweCountryProfile-WEB_v1.pdf. (Assessed on 14 August 2021).

World Food Programme (WFP). (2020). Zimbabwe Annual Country Report 2020: Country Strategic Plan 2017–2021. Available at: https://docs.wfp.org/api/documents/WFP-0000125453/download. (Accessed on 9 September 2021).

Wray, L. R., & Nersisyan, Y. (2020). Does the national debt matter? *The Japanese Political Economy*, *46*(4), 261–286.

Zenios, S. A. (2021). 'The risks from climate change to sovereign debt in Europe', *Policy Contribution*. Available at: https://www.bruegel.org/wp-content/uploads/2021/07/PC-2021-16-070721.pdf. (Accessed on 15 August 2021).

Zhou, J. (2020). Zim debts should be cancelled. *The Daily News*. *05*/08/2020

Zimbabwe Resilience Building Fund (ZRBF), (2016). El Niño-Southern Oscillation (ENSO) cycle events and their impacts in Zimbabwe. Available at: http://www.zrbf.co.zw/download/library/5F00B100B2002900/enso-analysis--a5/. (Accessed on 15 August 2021).