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Enhancing Private-sector Participation in Climate Adaptation Finance

MIRACLE PATIENCE MABVUNDWI[1], INNOCENT CHIRISA[2], NYASHA NDEMO[3] AND ARCHEFORD MUNYAVHI[4]

Abstract

This article examines how participation of the private sector can be intensified in climate change adaptation finance in Zimbabwe. It argues that although measures can be implemented in any rural-urban set-up to adapt to climate change, there is need for financial assistance for effective climate change adaptation. This calls for the role of the private sector to close the financial gap in climate change adaptation and what can be done to stimulate these private sectors to participate in climate change adaptation finance. This study is premised on the background that the national government has a role to stimulate and enhance private sector involvement in adaption because the impacts of climate change are devastating the lives of many across the world, especially in developing countries and the adaptation costs will continue to increase with time. Therefore, such countries are facing difficulties in adaptation to climate change hazards, and need the help of human, technical and financial doses from the private sector. The study was mainly a desktop study involving examining literature and documents fetched from Google Scholar, Ebsco and websites with news and related material with case studies involving key informant interviews. For data analysis, the study engaged mainly in textual analysis. From the study, it is revealed that developing countries are financially challenged in their adaptation projects against the ever-increasing climate change hazards and there are barriers to private-sector participation that the national government should be aware of to attract private-sector investment in their countries.

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Keywords: climate change, private sector adaptation, investment, resilience, enabling environments

INTRODUCTION

Climate change can be natural or human-induced, leading to climate change hazards such as droughts, floods, heatwaves, tropical cyclones, heavy winds, typhoons and many others. Its impact has led to the loss of life, destruction of infrastructure and properties, poverty, food insecurity and threats to the physical environment and ecosystems. Although measures have been put in place in disaster-prone areas, the impacts are still felt. Many countries are battling climate change and its ever-increasing impacts. System thinking and suggested measures have been applied to respond to climate change hazards, but are facing challenges in developing countries. These challenges call for intervention from the private sector (UNFCCC, 2007). Private-sector participation is important in climate change adaptation as it helps with financial assistance (DCED, 2016). It has been noticed that costs associated with adapting to climate change risks are far much higher than international public finance for adaptation. UNEP (2021) argues that international public finance available for climate change adaptation in 2014 was 23 billion dollars and, by 2030, it is estimated that adaptation costs will range around 200 billion dollars. In developing countries alone, it is estimated at 70 billion dollars. On a different note, the World Bank estimates that developing countries will need about 90 billion dollars annually through 2050 to adapt to climate change and the public sector alone cannot meet this financial goal but with the engagement of the private sector (UNEP, 2016). Although the implementation of adaptation is worldwide, little is done on climate risk reduction (UNEP, 2021). In the case of Zimbabwe, the country is still benefiting from global finance. This shows that financial investment is seriously needed to cope with climatic hazards and to cover adaptation costs.

As argued by Amoah *et al*. (2022), in 2010, a group of 190 countries established the Green Climate Fund (GCF) to provide financial support for global greenhouse gas (GHG) emissions mitigation efforts. The main objective of the fund was to promote and facilitate Green Finance initiatives and raise the concept in the world (*ibid.*). Moreover, sustainable private finance, also known as GF, has been recognised as an essential part of the United Nations' Sustainable Development Goals (SDGs) 16 and 17 (Li *et al*., 2023). Kumar *et al*. (2023) observe that financial institutions are required to promote green goods in savings,

credit, insurance, transfers of money, and modern electronic delivery channels to offer those funds essential help to people navigating an unpredictable climate. Consequently, overall investment strategy should change to be more environmentally friendly, as it will help to achieve the UN SDGs, especially SDG 1 (no poverty), SDG 7 (affordable and clean energy) and SDG 13 (climate action), all of which are designed to promote green growth. Hence, the private sector must play an active role in climate change financing to ensure sustainability (*ibid.*).

Most governments in developing countries have implemented various policies and legislation to ensure environmental management to mitigate climate change effects. Climate change has resulted in poverty across continents resulting in energy challenges, food insecurity, environmental degradation and desertification, just to mention a few of the effects (Jessel *et al.*, 2019). Climate change financing is, therefore, crucial in enforcing laws and policies for climate change reduction and sustainability. Despite government efforts in most developing countries, there is also need for public-private partnerships (PPPs) between the government and the private sector to make joint efforts in climate change initiatives through climate change financing. Energy sufficiency and fuel savings can reduce the operating cost of government buildings, private companies and residences. The creation of jobs by the private sector from emission reductions and climate mitigation strategies will result in significant benefits for local economies. A study by the U.S. Conference of Mayors Climate Protection Centre in 2008 indicated that adhering to federal, state and local goals promoting renewable energy, energy efficiency, and alternative fuel, can transform the economy by increasing the number of green jobs five-fold. The report further suggests that cities are especially well-placed to reap the benefits, as more than 85%of green jobs are in metropolitan areas.

Survival coping strategies and indigenous knowledge have been employed to respond to climate change hazards but found to be temporal and unreliable. Climate change adaptation measures are also being used in developing countries, but they are still in their infancy. Adaptation to climate change involves an adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects that moderate harm or exploits beneficial opportunities (UNDP, 2005; Levina and Tirpak, 2006). Therefore, there is need to strengthen climate change adaptation to the hazards through the incorporation of the private sector to ensure resilient settlements. The article seeks to study how countries

and states attract or enhance private-sector participation in climate change adaptation.

THEORIES INFORMING THE STUDY

The study used the theory of change in articulating its intention. As argued by Anderson (2005), the theory of change is "Essentially an explanation of how a group of stakeholders expect to reach a commonly understood long-term goal." In adapting to climate change, private-sector participation is important in achieving long-term minimal impacts of climate change. The theory argues that there is need for leadership and participation in dealing with the problem whereby there are different stakeholders in defining the problem and assumptions from different perspectives and the final way to use in attacking the problem (Bours *et al.*, 2014). Describing the problem is also important whereby the private sector must address the root cause of the problem and understand climate change causes and impacts (Sowden *et al.*, 2019). The next stage in the theory of change is to map a pathway for change, that is to map the assumed cause-effect relationships of climate change. Then after, there are defining interventions, whereby adaptation strategies are brainstormed and the best strategies are selected (Bours *et al*. 2014). Identifying assumptions and barriers about how change will happen and listing barriers are also addressed. Indicators and thresholds need to be identified whereby indicators are necessary to demonstrate progress and outcomes are met (Anderson, 2005). The theory of change explains the stages of private sector engagement.

The Foreign Direct Investment (FDI) theory is a process where investors acquire their assets from their mother countries to control the production, distribution and activities of other countries (Moosa, 2002). In this context, the private sector from the mother countries can come up with financial and technical assets to address climate change and ensure the development of that country. The private sector will be controlled because it can deal with the global challenge of climate change impacts that the government of that country is battling to address. For a country to experience FDI, it must have an enabling environment, such as a good policy framework and stable macroeconomic activities, just like investing in climate change adaptation.

LITERATURE REVIEW

Private sector engagement in financing climate is being practised in some countries in responding to long-term climate change hazards. Developed

and developing countries are successful in adapting to climate change, but adaptation to climate change is being practised around the globe. The private sector is involved in planning, implementation, reporting and monitoring and evaluation (Crawford and Church, 2019). The literature was reviewed through the analysis of the reasons for engaging the private sector in adaptation projects, ways or strategies implemented suitable for attracting or enhancing the private sector in financing the climate change adaptation strategies and highlighting the barriers that can block the private sector from investing in climate change adaptation.

WHY ENGAGE THE PRIVATE SECTOR IN FINANCING CLIMATE CHANGE ADAPTATION?

The private sector can intervene in financing climate change adaptation strategies and projects provided there are clear enabling environments for that area that needs their intervention (Altenburg and von Drachenfels, 2008). Therefore, their role has been seen as very important in developing countries due to multiple reasons. One of the reasons for engaging the private sector is to mobilise financial resources and technical capacity (Biagini and Miller, 2013). Financial instability has affected most developing countries such that when they are faced with climate change stress and shocks, they struggle to cope, thereby turning to indigenous knowledge and survival strategies that are not sustainable. This calls for the private sector to assist in moderating the disasters affecting people as they are capable of intervening financially and providing technical know-how and technologies for adapting to climate change. The private sector is also important as it leverages the efforts of governments (*ibid.*). Once the private sector is aware of the climatic risk information and data of the country, it can improve the decisions and perspectives of the public sector and influence them to follow what is beneficial in investment. The private sector is also important in engaging civil society, community efforts and developing innovative climate services and adaptation technologies (*ibid.*). The private sector appreciates the efforts done by civil society such as applying indigenous knowledge in coping with climate change disasters and improving adaptation.

EFFORTS TO INTENSIFY PRIVATE-SECTOR PARTICIPATION IN FINANCING CLIMATE CHANGE ADAPTATION.

The United Nations Development Programme (UNDP) implemented projects financed by Least Developed Countries Fund (LDCF) and the Special Climate Change Fund (SCCF) to deal with climate change hazards and many ways were employed to attract private sector investment in

these adaptation strategies (*ibid.*). Raising awareness of potential risks and response measures is a strategy to enhance the private sector in financing climate change adaptation (Tall *et al.*, 2021). The LDCF has implemented many projects in the Cape Verde that raised awareness of the risks, vulnerability and adaptation to climate change in the water sector (Biagini and Miller, 2013). The area has been devastated by drought that led to massive water scarcity. Through raising awareness, the policymakers and private sector had access to information and data on climate and weather variabilities in the area where the change was needed (Micale *et al.*, 2018). Through that, investments were done in water capture, and storage and distribution were altered to fit adaptation strategies (*ibid.*). This is also supported by Stenek *et al.* (2013) who explained that there is need for the availability and accessibility of data and information in attracting private-sector participation in adapting to climate change. This is important because enabling environments of free and easy access to climate observations and projections, for example, flood risk maps, water hydrographs, fire risk maps and rainfall intensity, allows the private sector to have a sense of responsibility for that place and also helps in familiarisation of climatic conditions and hazards.

Literature has also revealed the need for capacity building in training the private sector in the management of climate change risks as a strategy to attract them into investing and financing climate change adaptation strategies (OECD, 2015). This enhances an organisation's institutional capacities in understanding the modalities of climate funds and accessing and using climate finance (CAN, 2015). There is need for groups for consultation and coordination and training in the management of climate change risks. A study done in Sierra Leone revealed that the capacity of above 50 hydro engineers from the public and private sectors was attracted through designing and managing climate risks in water supply systems and maintaining climate-resilient infrastructure (Biagini and Miller, 2013). This shows that private sector training is important as they are trained on the risks associated with climate change.

Adjustment on regulations, policies and institutional infrastructure is a strategy reviewed to enhance private-sector participation in financing climate change adaptation (Stenek *et al.*, 2013). The national government should play a role in creating sound policies, plans and regulatory environment for resilience (Coopers, 2013). It is the role of the governments to improve on the policies and building codes that

incorporate climate change conditions and associated impacts, local zoning regulations that consider the changing climatic conditions and land tenure policies that define land rights of vulnerable groups (Stenek *et al.*, 2013). Legislation and impacts assessment policies and regulations are attractive to private sector financing adaptation projects (*ibid.*). The government must introduce subsidies for the acquisition of climate change adaptation technologies to enhance private-sector participation in financing. Biagini and Miller (2013) exemplified that in Zimbabwe, the SCCF project managed to finance the implementation of regulatory and fiscal incentives to stimulate climate risk reduction by the private sector. In Liberia, regulations were put in place on coastal development in consideration of climate change.

National governments should implement long-term plausible strategic plans directed at climate change adaptation (ATCP, 2010). Bangladesh is one of the countries that successfully attracted the private sector in adapting to climate change due to the creation of an action plan called the Bangladesh Climate Change Action Plan"= (BCCAP) that consisted of six pillars comprising food security, social protection and health, comprehensive disaster management, infrastructure management, research and knowledge management, mitigation and low-carbon development and capacity building and institutional strengthening (*ibid.*). The plan's main objective was to address the impact of floods, targeting the vulnerable but, surprisingly, the plan received support and assistance from the private sector because it was primed.

Studies have proven that PPPs can enhance private-sector participation in financing climate change adaptation strategies. Terpstra and Ofstedahl (2013) argue that it is not always the situation where private sector investment is likely, such as investing in a public good that is not profitable to them, especially in water infrastructure, flood protection, safety nets and disaster management. The public sector or the national government should be the leading sector in financing, with the assistance of the private sector by implementing government-funded projects through a partnership between the public and private sector such as transporting food to drought-devastated areas, while the public sector purchases food. This relationship can benefit the public sector, private sector and beneficiaries. Through engaging in PPPs, the private sector was involved in the adaptation projects in Sierra Leone. Biagin and Miller (2013:8) purport that:

In Sierra Leone, the LDCF financed a Public-Private Sector Forum focused on policies and the promotion of investment and entrepreneurship for managing climate change risks to water distribution and usage. Affordable climate-resilient community-based water harvesting, storage and distribution systems were designed, built and rehabilitated in Freetown with private-sector participation to withstand projected changes in rainfall patterns and intensity.

Such partnerships are important as they attract private investors through the risk-sharing of responsibilities.

Kenya developed several strategies through Multi-Stakeholder Partnerships (MSPs) for Micro Small and Medium Enterprises (SMEs) to be attracted to financing climate change adaptations (Crick *et al.*, 2018). Table 1 shows Kenya's experience in private sector involvement in adapting to climate change. It explains the role of MSPs in supporting the development of enabling conditions for adaptation to climate change among Micro, Small and Medium Enterprises (SMEs) through Key Informant interviews (KI) done in Kenya (*ibid.*).

Table 1: Kenya's experience in private Sector Involvement in Adapting to Climate Change (Crick *et al.*, 2018).

Strategies	**How this strategy is used in Multi-Stakeholder Partnerships (MSPs)**	**Examples of MSP activities that employ this strategy**
Value chain and market analysis	Many of the MSPs identified by participants were underpinned by value chain and market analysis, where development actors seek to identify weaknesses and opportunities within and along value chains that limit producers' resilience in the face of climate and other risks. In many cases, development actors then seek to identify opportunities for private sector actors to support horizontal and vertical transformations within the value chain and to create new products and services that support climate resilience among smallholder farmers. This is often accompanied by an analysis of the enabling conditions required to close barriers to entry that can be used to guide strategic donor	Kenya Cereal Enhancement Programme (KCEP) was structured through identifying business cases and brokering business linkages between small-scale producers and larger-scale processors, for new climate-resilient crop value chains. Through market analysis, the partnership also identified opportunities to assist other SMEs to develop businesses that would increase access of small-scale producers in these chains to improved agricultural inputs and tools and to post-harvest management services, such as storage and warehouse receipt systems.

	and public interventions. Within the MSPs identified by KIs, this approach was common to support the identification of market opportunities to develop new product lines and to target new markets for improved and climate-resilient inputs and pre- and post-production services.	
Multi-stakeholder dialogue fora and brokering of business linkages	KIs suggested MSPs include some action designed to facilitate multi-stakeholder dialogue and create opportunities for private sector actors (and other public and civil society sector actors) to share knowledge, learn about each other's needs and the needs of a given customer base, identify areas of complementarity and build trust. KIs suggested relationship and dialogue building between potential partners is often pursued with the same goals as value chain analysis: to support value chain actors to identify opportunities for shared value from market interventions and the development of new practices, rules, technologies and market linkages to enhance resilience through learning and collective action.	Netherland's development organisation, SNV, held 'partner days', under the HortIMPACT for horticulture and Smart Water for Agriculture (SWA) partnerships bring together value chain actors, including producers, aggregators, processors, input suppliers, financiers, development partners and government representatives, to identify synergies and potential future partnership opportunities.
Research and other investments in information and tools	KIs identified a range of interventions through MSPs that were intended to overcome gaps in research and information that serve as barriers to entry for the private sector in delivering adaptation goods and services. This included collaboration with research institutes, for example, to support product development and innovation and investments in data collection and provision in areas, such as market and climate information.	Planning for Resilience in East Africa through Policy Adaptation, Research and Economic Development (PREPARED) led to a quality service improvement programme with the Kenya Meteorological Department, that emerged in response to the identification of climate data quality as a core challenge for insurance companies who struggle to access a robust index through that to determine commercially viable premiums for crop insurance for small-scale producers in remote regions.

Marketing	KIs suggested MSPs often supported private sector actors to overcome barriers to accessing new markets, for example, for climate-smart inputs and technologies, by supporting the advertising of their products and services through activities such as training and technology demonstration and through partnering with local extension services.	The Conservation Agriculture 4 For Security (CA4FS) partnership supported agricultural machinery suppliers who produce tools for conservation agriculture, to create awareness about their products to engage new markets through demonstration plots and training
Access to finance, financial incentives and financial de-risking strategies	KIs identified a range of financial mechanisms where public actors within MSPs sought to enable and incentivise private sector actors to provide goods and services that support producer adaptation. These include subsidies, loans, tax incentives, grants, co-investment models and other de-risking strategies.	The Innovation Fund established within HortIMPACT provided start-up financing for SMEs to develop new products and services that support value chain upgrading and other adaptation and production constraints within value chains.
Incubation services	Business incubation services, such as mentoring support, support to set up contracts (e.g. for out-grower schemes) and other forms of business and climate information training were also offered through MSPs, to support private sector actors to deliver adaptation goods and services.	KMT worked in partnership with actors, including Farmers Pride, to deliver business incubation services for young entrepreneurs to set up agri-business franchises, to increase producer's access to improved inputs
Empowering the consumer base	In most of the MSPs highlighted by KIs, in addition to undertaking interventions to support implementing private sector actors to mobilise for adaptation, public sector actors also took action designed to address gaps within enabling environments for adaptation and business development at the level of beneficiary producers. This includes activities, such as delivering producer training on adaptation strategies, providing loans and financial incentives to invest in new inputs, services and	The SNV-led Smart Water for Agriculture programme engaged financial institutions to launch a Smart Water Loan facility to provide loans to smallholder farmers through saving and credit cooperatives to allow them to adopt smart water solutions. Meanwhile, KMT partnered with Tosha Women's Group to support the aggregation of sheep and goats among female animal traders in Marsabit, to enable them to get into contractual agreements with established

	technologies and supporting producer organisations in sustainable common-pool resource management. It also includes activities such as helping to mobilise producer aggregation, improving the bargaining power of small-scale producers and supporting end-market private sector actors to access more reliable suppliers. KIs highlighted that such action has the potential to be mutually reinforcing in terms of unlocking the private sector for adaptation; providing a consumer base that is empowered and incentivised to respond to investments from the wider private sector that can participate more consistently as suppliers of quality products within value chains.	end market players and transport providers.

From Table 1, KI done in Kenya helped in the provision of types of partnerships with enabling environments to produce a business framework that allows the private sector to deliver adaptation goods and services. These can help overcome barriers to adaptation for producers while compensating these implementing private sector actors for the additional risk associated with developing these new products, services and markets for less privileged groups, with higher barriers to access (Crick *et al.*, 2018).

METHODOLOGY

The study was conducted in Zimbabwe, in the southern part of Africa. Zimbabwe is wholly landlocked country (Parsons, 1993). It is bordered by Zambia to the north-west, Botswana to the south, South Africa to the south and Mozambique to the east (Parsons, 1993). The research used a qualitative approach. The main instruments for data collection were interviews with key informants done in Shona and English languages understood by the respondents. Ten interviews were done with private sector players in Zimbabwe, respondents that comprised private company officers, charity organisations and NGO representatives who were purposively selected. Data collected through key informant interviews included challenges and barriers in private sector participation in the

climate adaptation financing. Data were also collected through examining literature and documents, a total of 30 journal articles were analysed obtained from several Google Scholar, Ebsco and other websites.

RESULTS

BARRIERS TO PRIVATE SECTOR ENGAGEMENT IN ADAPTATION

The private sector's participation can be impassable in climate change adaptation if the aforementioned efforts or strategies to intensify their participation in financing climate change adaptation are not in their favour or if they are not improved to lure them into participation (LDCPF/SCCF Council, 2012). These barriers include poor policies and regulations, no awareness campaigns on climate information, no incentives and fewer profits for them, little or no partnerships for risk sharing, zero training for the private sector due to lack of capacity building, reports for unclear channelling of resources for climate change adaptation strategies and economic instability with high inflation rates in countries (Dougherty-Choux, 2015; Micale *et al.*, 2018). These can discourage the private sector from investing in climate change adaptation. Such barriers need to be corrected by the national government before calling for investment and this can be successful if they could recognise such barriers and hindrances to the private sector in financing the climate change adaptation projects.

Table 2: Summary of the barriers to investing in climate change adaptation (Micale *et al.*, 2018)

Barrier Type	Barrier Name	Definition
Context Barriers	Poor policy environment Poor Institutional Environment Poor market environment Poor value chains and human capital	The policy environment lacks conditions supportive of sector-specific investment (e.g., no requirements for businesses to implement disaster risk management strategies). Legal and regulatory institutions and infrastructure that support investment is lacking (e.g., property rights, contract enforcement, permitting, rule of law, etc.). The market environment is unsupportive of sector-

		specific and general investment (e.g., a weak economy, unsophisticated financial institutions, weak historical track record of sector-specific investment, etc.). Environment lacks the organisation and people with competent capabilities for implementation and success of the investment (e.g., no sector-specific value chain or local sectoral expertise).
Business model barriers	Uncertain or unknown value-addition High cost Lack of technical capacity	The value or benefit of the technology is not known to users or is uncertain; users do not consider their climate risk in decision-making The upfront and/or operational cost of technology is too high Prospective users of the technology do not have the technical capacity that is needed to implement or use the technology
Internal capacity barriers	Lack of internal capacity	Internal management and operational capabilities of the adaptation product or service provider are insufficient to scale.

To enhance the private sector in financing climate change, countries should create "enabling environments" that can attract these investors (CAN, 2015). Enabling environments are adjustments or ways that can be implemented to the already existing way of conducting development or investment in any country to attract investors (private sector) for that particular project. Enabling environments can be created through understanding and an analysis of ways that can enhance private-sector participation. The literature review highlighted such efforts that can attract investors. The Philippines created an enabling environment for private-sector participation in climate change adaptation finance to the extent that adaptation and climate resilience measures were done

without losses, rather than projecting future revenue and minimising costs.

Case Study 1: Energy Development Corporation (EDC) Philippines: Investing in climate adaptation measures with the support of the first-peso dominated green bond issued by International Finance Corporation (IFC)

The Energy Development Corporation (EDC) is the largest energy company in the Philippines. The country is highly vulnerable to climate change, as it is one of the world's cyclone-prone regions, with about 20 cyclones each year and is highly susceptible to floods, droughts and landslides. When Tropical Storm Urduja brought one meter of rain to the region in three days in December 2017, it caused significant damage to the generation facilities of EDC Philippines, reducing capacity by 50%at the Malitbog Geothermal Power Plant.

EDC Philippines, with the support of a Macquarie Infrastructure and Real Assets-led consortium as a major shareholder, realised that existing infrastructure was not resilient enough to evolving climate-related disasters including record typhoon wind speeds and increasing amounts of rainfall per event. The company took the following steps:

> Embedded climate risk into decision-making: EDC's management team updated its modelling and risk analysis to include intensifying climate-related natural events and concluded that EDC would require additional resilience measures and infrastructure investments (EDC, 2020).

Invested in critical points of infrastructure: EDC spent 313.8 million PHP (about US$6.2 million) in 2018 on climate adaptation measures, seeking to improve the company's resilience, minimise risk exposure and ensure a continuous energy supply to consumers and the local community. EDC made targeted investments in the most critical points of the infrastructure that would result in the greatest reduction of value at risk, based on cutting-edge, high-resolution LIDAR mapping and deluge modelling.

The 2017 disaster provided the impetus for EDC Philippines management to invest in resilience building, which enabled the company to ensure continued service to its customers while protecting future revenues, minimising costs and reducing losses.

An enabling environment and financial innovation, along with direct investments from EDC Philippines and its shareholders, the IFC, also supported the issuance of the first internationally rated triple-A Philippine peso-denominated green bond issued by a multilateral development institution to support adaptation and resilience-related measures at EDC Philippines' plant. It had a value of about US$90 million with a 15-year maturity. IFC issued the bond in direct response to the 2017 events and intends for the issuance to help spur domestic capital markets to play a larger role in mobilising savings for climate finance (IFC, 2018).

EDC Philippines had a supportive enabling environment and did not seem to face any regulatory barriers. It worked with the IFC and a host of local actors to ensure adequate resilience measures were undertaken. In addition, EDC Philippines collaborated with municipal agencies and the local community to understand climate risk factors and best practices to ensure sustainable adaptive measures.

EDC's Disaster Prevention and Recovery Unit, a team made up of top rescue, medic first aid and water rescue personnel, conducted training around all of EDC's host communities to boost community resiliency. The unit also created the first-ever network of first responders across the country to exchange best practices and experiences, to the benefit of the host communities. Coordination with municipal and local stakeholders reinforced the long-term impact of resilience measures that would be beneficial to both the company and nearby communities (Tall *et al.*, 2021).

Understanding barriers that can disturb the private sector in investing is key for every country. Developing countries should understand what can hinder the progress of financing climate change adaptation and try by all means to avoid and correct them. However, in most developing countries, due to high levels of economic instability, corruption and political influence, barriers always exist. Therefore, financing the climate change adaptation process should be done in a bureaucratic manner.

The private sector is not always available when needed for financing the climate change adaptation process. Therefore, national governments should not completely rely on them for financing climate change adaptation projects. These climate change hazards are not predictable,

therefore, educating the mass on alternatively relying on natural resource-based adaptation processes and using their indigenous knowledge should be heavily encouraged for adapting to climate change. When the private sector intervenes with their financial and technical assistance, it will be an added advantage for developing countries. Accountability and transparency should be the guidelines for adaptation finance, especially in developing countries. The financial flows and technical assistance should be outlined and accounted for. The channelling of resources should be clear and understandable to both the public and private sectors. Developing countries lack accountability and transparency and this can affect the implementation of their adaptation projects. The national budget for most developing countries is facing challenges due to corruption, inflation and deficit due to excessive paying for borrowing. Governments end up in a budget deficit and bankruptcy such that they need full investment from the private sector. However, in the private sector, if the adaptation projects are not directly benefiting them, they do not invest. Therefore, the public sector should have a budget from where they could take finances for adapting to extreme weather events and climate change hazards because risk-sharing with the private sector allows them to get involved in financing adaptation projects.

Private-sector participation in Zimbabwe is still at its infant stage. Due to macroeconomic problems and the fall of the Gross Domestic Product (GDP) in Zimbabwe, the costs of adaptation will consequently be higher and the agriculture sector is getting affected. Therefore, great adjustments should be done to the micro economy of Zimbabwe to attract investment in dealing with climate change. It is believed that an unstable economy discourages investors.

Although financing climate change adaptation strategies are not yet dominant in Zimbabwe, the country is trying some adjustments through behavioural changes and community-based adaptation strategies, especially in the Chiredzi District and Makuwere area in the Mberengwa District, in coping with climate variabilities and their implication on the agriculture sector. Livelihood-centred approaches are used in adapting to climate change and disaster risk reduction in areas such as Bulima, Mangwe and Gwanda Districts. These behavioural change approaches,

however, lack funding and technical assistance. This calls for the national government and its ministries to brainstorm on enhancing or attracting the private sector in financing climate change adaptation projects without relying on the private sector and improving these community-based strategies and livelihood-centred approaches financially and technically. This will require adjusting and working on their poor economy, climate governance (national policies) and regulations, financial policy framework and channelling of resources for climate change adaptation.

Despite being in Natural Farming Region 4 characterised by low rainfalls, Masvingo's climate has

- changed to receive high rainfall with floods to the extent that low bridges get flooded. In adapting to
- floods, the city storm drains have been unblocked. Sand and rubbish were removed from the drains to
- allow easy passage of water during flood times. The storm drains were unblocked in winter as after winter, rains are unpredictable. In an **interview,** one of the Supervisors at the construction site interviewed explained that:

> We are preparing for the rainy season, and we have started early because the rains of this region are unpredictable. For the past years we have been struggling with flooding of the streets that have affected pedestrians and traffic movement and the roads, therefore, the authorities have found out that storm drains are blocked and are not allowing the passage of water, and that's why you are seeing us here embarking on these projects early before the rain season to unblock them.

The authorities employed civil contractors to execute the project, and it is funded by ZINARA to make sure that there is resilience and sustainability in Masvingo CBD. Therefore, the government is trying to use national revenues in combatting climate change impacts through unblocking of storm drains.

Zimbabwe is failing to copy or learn from what other countries are practising to attract investment. Developing countries are different and each country has its way of development, relating to other countries, beliefs and in growth and expansion. Countries should learn how other countries are enhancing the participation of the private sector in financing climate change. Zimbabwe must comprehensively check on its barriers to climate adaptation finance so as to address them at grassroots level and adjust to copy what other countries are doing to successfully

lure private sector climate change adaptation finance. Due to excessive borrowing and macroeconomic problems, Zimbabwe has a budget deficit. Regardless of these national challenges, Zimbabwe must work on its national budget so that it can aid in the investment of the private sector. In the context of climate change adaption, the private sector is unlikely to benefit from it, therefore, there is need for division of labour or risk and responsibility-sharing through PPPs.

DISCUSSION

The study identified a number of challenges that affected and hindered private sector participation in climate adaptation financing, that included, among others, poor policies and regulations, no awareness campaigns on climate information, no incentives and fewer profits for them, little or no partnerships for risk sharing, zero training for the private sector due to lack of capacity building, unclear channelling of resources for climate change adaptation strategies and economic instability with high inflation rates in country (Dougherty-Choux, 2015; Micale *et al.*, 2018). These findings are further supported by **a** *Newsday* DATES???? article that indicated that Zimbabwe is characterised by a high inflation and volatile economic situation. The increased high inflation and unstable economy lead to poor profits in private sector business and, therefore, impacting negatively on what the private sector does, limiting their participation in climate adaptation finance. Their non-participation substantiates CAN (2015)'s assertion that to enhance the private sector in financing climate adaptation, countries should create "enabling environments" that can attract these investors. Studies conducted reveal that a macroeconomic situation hinders the investment of some necessary infrastructure such as highly climate resilient infrastructure, awareness campaigns and private sector participation in decision-making.

CONCLUSION AND RECOMMENDATIONS

This article sought to examine how the participation of private sector can be intensified in climate change adaptation finance, particularly in Zimbabwe. A qualitative analysis of results pointed out that developing countries are financially constrained in the mitigation of climate change effects. As presented in the results and discussion above, there are multiple stumbling blocks to private sector participation which the Zimbabwe government really needs to address to lure private sector participation in climate change adoption financing. The findings, therefore, again suggest that Zimbabwe government must first work on its major problems, including poor macroeconomic environment and

policy framework, because other barriers are underpinned by these two main barriers. Recommendations suggested are:

- Defining barriers to private sector involvement in climate change adaptation helps in looking for the best option to enhance private-sector participation in climate change adaptation finance.
- National governments should have a set-aside budget for such extreme events and climate change hazards.
- Countries should have a clear and understandable financial policy framework and climate governance because no investor wants to invest in nations that have poor financial and legislative frameworks.
- Learning from other countries' experiences with climate change adaptation finance is crucial for every country.
- Creation of Action Plans (Nation Adaptation Plans) that define their purposes and specifically target to address climate change impacts.
- Accelerating Circular Economy initiatives by the private sector.
- Government can introduce a climate change tax/carbon tax to create a fund that assists smaller private companies to cope with climate change challenges.

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