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ORIGINAL PAPER

Exploring the determinants of disaster and climate resilience building in Zimbabwe's rural communities

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Abstract
With the burgeoning threats from natural hazards and extreme weather events driven by climate change in every section and sector of society, building resilience against disasters and risks posed by climate change has become an unescapable discourse. The study's main thrust is to establish the determinants of resilience building in Zimbabwe's rural communities. The study adopted the qualitative constructivist grounded theory approach in conjunction with participatory action research to gain insights from community members and traditional leaders. A total of forty-six participants from Chimanimani District, Zimbabwe participated in the study. The findings revealed that the availability of natural and human resources, collective efficacy, government and development agency support systems, indigenous knowledge systems, and livelihood diversification were crucial determinants of resilience building for rural communities in Zimbabwe. The identified determinants for resilience building signal that these determinants need to be harnessed to inform policy and practice interventions. Furthermore, the availability of the identified determinants implies that rural communities can minimise, and prevent losses, reduce exposure to natural hazards, disasters and climate change risks and manage the impacts of natural hazards whenever they emerge. The study recommends that these determinants be complemented by access to technology, resilient community infrastructures, robust social protection systems, and hazard risk assessment participatory processes by rural communities. In addition, effective emergency and health services, among other contingent measures essential to improve community resilience.

Keywords Determinants · Natural hazards · Disasters · Climate change · Resilience · Rural communities · Chimanimani · Zimbabwe

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1 Introduction and background

Natural hazards, particularly those of hydrometeorological origin are taking a toll on every sector and section of society, placing all developmental aspirations at risk (Chanza and Musakwa 2021). This is attributed to Zimbabwe's poor disaster risk reduction and management, an ailing economy that has failed to support and sustain livelihoods, uncoordinated climate change governance, incapacitated institutions, and a fragmented social resilience framework, among other setbacks (Manyena 2016; Mavhura 2021). There is compelling evidence of physical traces of hydrometeorological hazards, disaster and climate change risks in Zimbabwe's rural communities, where these communities have no means of building back better and bouncing forward after experiencing natural hazards and extreme weather events (Mavhura 2021; Mavhura et al. 2013). In other words, after experiencing natural hazards and extreme weather events, communities are left vulnerable with regard to rebuilding a resilient future. In the past two decades, the Southern African region witnessed the devastating impacts of climate change-induced tropical cyclones (Kudejira 2023). For example, these cyclones include Cyclone Eline, Cyclone Japhet, Cyclone Idai, Cyclone Kenneth, Cyclone Eloise and Cyclone Freddy (Pausata et al. 2017; Macamo 2021; Aderinto 2023). Countries such as Zimbabwe, Malawi, Mozambique, and South Africa were encumbered by these cyclones in one way or another (Dube et al. 2021; Kudejira 2023).

It is worth noting that cyclones are on record for leaving trails of destruction, damage, and risks to human life, the economy, livelihoods and human health, and plunging most communities into a food crisis (Satterthwaite et al. 2020). On that note, rural communities bear the brunt of the harrowing impacts of climate change-induced hazards, most of which escalate into disasters (Djalante 2014; Runga 2023). From the viewpoint of Madzivhandila and Maserumule (2022), most rural communities lack training, awareness, technological resources, and preparedness, which are fundamental in the pursuit of resilience building. That said, the susceptibility of most rural communities to natural hazards and extreme weather events necessitates a need for resilience building (Davies and Davies 2018; Busayo et al. 2020; Cobbinah 2021). The objectives of this study are to explore the determinants of resilience building in Zimbabwe's rural communities and to determine how resilience is constructed in the Chimanimani District. It is important to explore the factors that serve as determinants for disaster and climate resilience building in rural communities. This serves as an acknowledgement of their non-passiveness in reacting to natural hazards-induced disasters and climate change aberrations. This study adopts the conceptualisation of determinants by Keating et al. (2017) who view them as elements or factors that contribute to the development of resilience in a system or community when facing challenges stemming from climate change and disasters.

As rural communities face a myriad of economic, political, social, and structural bottlenecks that perpetuate their vulnerability to natural hazards and extreme weather events (Forzieri et al. 2022; Venganai and Mupoperi 2023). However, it should be underscored that, in the wake of a plethora of impediments, rural people are not passive victims of natural hazards and extreme weather events caused by climate change (Djalante 2014; Chingombe and Musarandega 2021). Instead, they respond to these risks collectively or individually through a raft of measures, whether endogenous or exogenous (Torabi et al. 2018). By focusing on the determinants for resilience building, this study draws upon the arguments advanced by Imperiale and Vanclay (2021), that despite exposure to diverse

vulnerabilities in the face of natural hazards and extreme weather events, every community has positive capacities for resilience. Despite the growing need to understand factors contributing to resilience against disaster and climate change risks, little to no research has been conducted and published in Zimbabwe. A general search of the literature on the determinants of disaster and climate resilience building in Zimbabwean rural communities and beyond produces negative results.

This study advances the argument that there has been an overemphasis on the inequalities, constraints, and vulnerabilities rural communities face in the disaster risk and climate change discourse, while little attention is paid to documenting the determinants of resilience building to strengthen them. The distinguishing feature of this study is that it focuses on the community-level determinants of building resilience through the lens of rural communities and further surfaces how resilience is constructed at that level. While the definitions of resilience will be provided in the following sections, it should be noted that building resilience in the face of disasters and climate risks is one of Zimbabwe's top priorities as the country pursues sustainable development endeavours (Munsaka et al. 2021). On that note, Zimbabwe has mainstreamed resilience to climate change and disasters in its Climate Policy, the National Climate Change Response Strategy, and the Emergency Preparedness and Disaster Management Bill (Kudejira 2023). By focusing on the determinants of resilience building in the rural communities of Zimbabwe, this study underscores that knowledge of the determinants of resilience building is critical in developing pathways to promote disaster and climate resilience in poor rural communities (Leal Filho et al. 2021).

Furthermore, knowledge about the determinants of disaster and climate resilience building is essential in developing policies, targeted interventions, and practices for building sustainable and resilient communities (Ahmed et al. 2016). By focusing on the local level construction of resilience, the study challenges the top-down construction of the resilience concept, which in most instances does not capture the experiences of at-risk communities (Nunes 2021). This is because resilience is context-specific and is defined in relation to the risks that emerge differently in different local scenarios (Bahadur and Tanner 2014; Malalgoda et al. 2016). Thus, the study brings to the fore how resilience is constructed from the viewpoint of rural communities in Zimbabwe which is not often captured in the literature. In other words, this study approaches the concept of disaster and climate resilience from a people-centred perspective. Equally important, understanding the determinants of resilience to disasters and climate change through the lens of rural communities is crucial in signposting that local communities have resilience capacities and resources that can be appropriated in the face of disaster and climate change shocks. This dispels the widespread regard of rural communities as perennial victims that require protection.

2 Theoretical framework

This study adopted resilience theory as its theoretical foundation. Despite gaining traction in many disciplines, resilience theory is still riddled with ontological and epistemological ambiguities (Manyena and Gordon 2015; Kelman et al. 2018). As such, a commonly agreed-upon definition of resilience has been difficult to locate due to its multiple and uneven meanings in different meanings (Berkes et al. 2021). Additionally, several schools of thought have

diversely interpreted and operationalised the resilience concept, thereby punctuating it with operational ambiguities (Kruse et al. 2017; Van Breda 2018; Moghadas et al. 2022). Whereas details of what resilience is in various disciplines are beyond the focus of this study, resilience as a framework is central in disaster and climate change studies (Kelman et al. 2015; Torabi et al. 2018; Ngwaru and Niboye 2020). Forzieri et al. (2022) define resilience as the ability of communities to prepare for, reduce exposure, cope with, recover from, adapt to, and transform as required in the face of direct or indirect effects of climate change and disasters. As Manyena et al. (2011) posit, resilience carries a dualistic feature, referring to the durability of social systems in the face of stresses and shocks and their capacity to thrive and flourish following a destabilising event.

In climate change and disaster studies, the resilience theory finds residence as systems, communities, and individuals thrive to deal with disturbances and destabilisations that spring from climate change and disaster risks (Manyena 2016; Bahadur et al. 2013). Notably, in the wake of contestations surrounding the resilience concept, the conceptualisation of resilience is either an outcome or a process (Manyena 2016; Van Breda 2018; Taleb-Berrouane and Khan 2019). Other contestations spring from, whether resilience is a bouncing back or bouncing forward ability (Manyena 2016). In light of this, Dixon and Stinger (2015) denote that resilience as an outcome is defined as the ability to cope or bounce back after disasters or climate change shocks. On the other hand, resilience as a process is defined as the iterative ability to learn to mitigate future disasters and climate change threats (Glantz and Sloboda 2002). As Kruse et al. (2017) posit, resilience as a process embodies the diverse measures and activities deployed to overcome a disaster or climatic shocks, while resilience as an outcome depicts the results of responding to disasters and climatic threats. Put simply, Jacobson (2020) views the process versus outcome dimensions of resilience as reactive and proactive resilience. In an attempt to find common ground in the middle of the polemics regarding the conceptualization of resilience as an outcome or process, Van Breda (2018) suggests that resilience should be conceptualized as a process that leads to an outcome. This exposition corroborates the conceptualisation of resilience advanced by Sharifi and Yamagata (2016), who view resilience as the ability to adapt, resist and change (process) that leads to an acceptable level of functioning (outcome).

This study adopted the bounce-forward ability of resilience, as the bounce-back notion does not acknowledge changes that accompany climate change-induced disturbances (Manyena et al. 2011). In that regard, the study draws from the arguments advanced by Sharifi and Yamagata 2016 and Manyena 2016, that when natural hazards escalate into disasters, they impact societal life's psychological, social, and physical realities creating a disconnect thereby, making the return to the previous state unachievable. Thus, it is befitting to view resilience as the bounce-forward ability where systems, communities, and individuals deal with new realities and adaptions in the aftermath of destabilising events that spring from natural hazards, disasters, and climate change (Manyena et al. 2019). The bounce-forward ability affirms that systems or communities change in the aftermath of disturbances, thereby providing an opportunity to transform socioeconomic conditions and the status quo (Manyena 2016). The contestations regarding the conceptualisation of resilience are critical in exploring whether or not rural communities construct resilience as a process or outcome. Further, the conceptualisation of resilience as a bouncing forward ability in this study is essential in exploring whether or not the determinants of resilience building represent bouncing forward abilities from the viewpoint of the research participants.

3 Determinants of community resilience to disaster and climate change risks: A review of literature

Community resilience is situated within the broad resilience concept (Kruse et al. 2017). Despite the predominance of the concept in disaster risk reduction, ecology, humanities, environmental, and engineering studies, there is no single or widely accepted definition of the community resilience concept including the determinants of disaster and climate resilience and the capacities that exist to enhance community resilience (Mayunga and Peacock 2010; Mavhura 2017; Kelman et al. 2018; Kamara et al. 2019). Whereas some of the determinants of community resilience will be elucidated in this section, it is noteworthy to provide the definitions of community resilience as conceptualised by diverse schools of thought. Kelman et al. 2018 see community resilience as a characteristic of a community that promotes the general safety of its inhabitants and serves as a buffer against adversity, uncertainty, injuries, and violent risks. From the viewpoint of Kamara et al. (2019), community resilience is the ability of a community to reduce exposure to, prepare for, cope with, recover better from, adapt and transform as needed to the direct and indirect effects of natural hazards, climate change and disasters, where these effects can be both shocks and stresses. In the wake of multifaceted definitions of community resilience, this study adopts the definition of community resilience advanced by Nunes (2021) who conceptualises community resilience as the development, existence, and utilisation of community resources by its residents to thrive in an environment characterized by uncertainty, change, surprises, and unpredictability through the constant utilization of physical, social, cultural, and financial capitals that ignite the potentials to recover from change, sustain adaptability, and foster elements of growth and continuous learning.

Concerning the determinants of community resilience, Eshel et al. (2019) opine that determinants vary across different contexts and regions. Besides this, several scholars identified the determinants of community resilience in the face of disasters and climate change. Liu et al. (2023) denote that there are social factors that serve as determinants of community resilience. These include social cohesion and community networks. Similarly, Jacobson (2020) posit that social factors contributing to overall community resilience involve community relationships and networks, local knowledge of communities, and mental outlook in the face of adversity. According to Chirisa et al. (2018), economic factors anchor the positive prospects of community resilience. Boon (2014) infers that a diverse and robust economy contributes to resilience by providing resources for long-term planning, adaptation, and timeous recovery and fertile grounds for communities to invest in technology, social services and infrastructure supporting resilience-building. In light of the preceding, Eshel et al. (2019) posit that infrastructure and technology are determinants of community resilience in the face of disaster and climate change risks.

In addition, infrastructures (built capital) that include resilient housing, sanitation services, water, energy, and transport, coupled with the abilities to repair, retain and renovate as well as broad-based scientific and technical capacities and innovation, are critical determinants of community resilience to natural hazards induced disasters (Aldunce et al. 2016; Kamara et al. 2019; Jacobson 2020; Cobbinah 2021). Again, access to technology such as risk monitoring tools and early warning systems can assist communities in preparedness, response, and recovery efforts (Liu et al. 2022). According to Jones et al. (2019), natural asset management abilities, sustainable land use, and effective environmental and natural resource management, coupled with abilities to protect and maintain them, serve as determinants of community resilience by reducing community vulnerability to disasters

and climate change. Furthermore, community awareness, access and sharing of risk information in disaster planning, nurturing abilities for renewal, self-organisation, reorganisation, and appropriation of diverse kinds of knowledge including the blending of scientific, and indigenous knowledge also serve as determinants of community resilience (Jacobson 2020; Mavhura 2021; Moghadas et al. 2022). Again, community capitals including social, economic, political, built, and environmental capitals with a broader range of livelihood diversity, including hazard-resistant livelihoods, incomes, and equitable access and distribution of resources, can contribute to community resilience by enabling communities to be proactive and implement recovery measures in the face of uncertainty (Boon 2014; Islam and An 2014; Mochizuki et al. 2018).

4 Research methodology and study context

In exploring the determinants of disaster and climate resilience in Zimbabwe's rural communities, the study used the Chimanimani District as the case study. The Chimanimani District is located in Manicaland Province in eastern Zimbabwe. The district is bordered by the Chimanimani mountain range, which stretches parallel to the Zimbabwe and Mozambique boundaries (Runga 2023). Notably, the district is divided into 23 administrative wards (Kudejira 2023). Because of its geographical location and complex topography in the mountainous region, the Chimanimani district is considered a high disaster-risk area and a hotspot for natural hazards (Saurombe and Shava 2021). As such, the district is susceptible to natural hazards such as floods, cyclones, drought, landslides, strong winds, disease outbreaks, and excessive temperatures, which are further exacerbated by climate change (Venganai and Mupoperi 2023). As Chanza et al. (2020) stated, despite the Chimanimani area being riddled with socioeconomic vulnerabilities, fragile ecosystems, and poverty, the intensity of climate change-related hazards makes certain mountain altitudes inhabitable to humankind.

The factors that enable the communities in the Chimanimani district to develop capacities to withstand disturbances posed by natural hazards and extreme weather were explored with the view that the results of this study may apply to other rural contexts in Zimbabwe and beyond. Following the purposive sampling adopted by the researchers, the specific wards that took part in the study are Ward 4 (Nhedziwa), Ward 10 (Chikukwa), Ward 12 (Charleshood), Ward 15 (Chimanimani), Ward 16 (Tiya), Ward 18 (Nechirinda and Bvumbura), and Ward 21 (Ngorima). The purposive sampling was deployed because the researchers anticipated that the majority of the community members had been exposed to diverse natural hazards and extreme weather events and that they were acting to manage the impacts of the hazards they faced. Creswell and Creswell (2017) denote that, purposive sampling allows the selection of participants according to the needs of the study aimed at clearly bringing out the phenomena under investigation.

4.1 Research paradigm and approach

This study adopted the constructivist transformative or emancipatory paradigm. The transformative paradigm is premised on empowerment, inclusivity, and participation, considering that participants interested in the research process and outcomes must be included in the study (Thornberg 2012; Creswell and Creswell 2017). Based on this, the transformative paradigm informed the utilisation of the Constructivist Grounded Theory (CGT) approach.

According to Charmaz (2020), CGT comprises a set of guidelines and procedures for collecting and analysing data to generate a theory or conceptual model that reflects the participants' lived experiences. As an element of the qualitative approach, the CGT and its naturalistic features enabled the researchers to establish the experiences, world views, perceptions, and insights of the inhabitants of Chimanimani on the determinants of resilience building available to them (Mitchell 2014).

4.2 Sampling, sample size and data collection

Following the tenets of the CGT, participants were purposively sampled to achieve theoretical sampling and theoretical saturation. As such, the researchers selected the participants informed by the themes that emerged during the concurrent data collection and analysis processes (Charmaz 2020). Data were collected through Participatory Action Research (PAR). The adoption of PAR complemented the Constructivist Grounded Theory approach, as (PAR and CGT) lie within the constructivist paradigm (Morales 2016). As postulated by Kemmis et al. (2015), PAR legitimises the active role of communities in knowledge generation and problem-solving. PAR has social mapping, resource maps, focus group discussions, life histories, direct observations, secondary data review, diagramming, transact walks, informant interviews, and semi-structured interviews as data collection tools (Kemmis et al. 2015). This study utilised Focus Group Discussions (FGDs) and semi-structured interviews. The interface between CGT and PAR enabled Focus Group Discussions (FGDs) and semi-structured face-to-face interviews as data collection methods (Charmaz 2020). Following this, seven FGDs (with ordinary community members), each with an average of six people, were conducted. Four semi-structured interviews were also conducted with four traditional leaders. A total of forty-six participants participated in the study. Data were collected and analysed in two phases to achieve theoretical sampling and theoretical saturation. Theoretical sampling and theoretical saturation depend on pursuing an iterative process and thoroughly checking the constructed categories against the data (Charmaz 2020). The iterative data collection and analysis process is defined by Bryant and Charmaz (2019) as theoretical sampling, and it was meant to feed the categories with new data. Thus, the first data collection and analysis phase had three FGDs and two semi-structured interviews. Each FGD had a total of six participants. The second data collection and analysis phase had four FGDs and two semi-structured interviews. The FGDs were composed of men and women. Traditional leaders were targeted because they have influence and authority that can be important for implementing and sustaining resilience-building efforts. The researchers used the themes that emerged from previous data (FGDs and semi-interviews) to develop questions for the next round of data collection.

4.3 Data analysis and ethical considerations

Following CGT's tenets, data were systematically collected, organised and examined after each interview (Charmaz and Thornberg 2021). Thus, data collection and analysis were conducted simultaneously. The data analysis process involved open coding where data were examined line by line as a first step and given short phrases as codes using the participants' own words. The second stage of analysis involved axial coding which involved the identification of codes that are related and those that are dominant in some way. At this stage, the relationship between earlier codes was noted to allow the emergence of categories. The third stage was the constant comparison of data and categories. Subsequently,

researchers then looked for similarities, patterns, and dimensions within the data. The clearance to conduct the study was granted by the Faculty of Natural and Agricultural Sciences Ethics Committee (FNASREC) and the University Senate Committee for Research Ethics (NWU-SCRE) (Ethics clearance number NWU-01310-22-A9) of the North-West University. Further permission to conduct the study was granted by the Ministry of Local Government and Public Works, the Manicaland Secretary for Provincial Affairs and Devolution, and the Chimanimani Rural District Council. The researchers adhered to the ethical principles of informed consent, confidentiality, anonymity, voluntary participation, and avoidance of harm.

5 Findings

The findings are presented according to the categories that emerged during the cyclical data collection and analysis process. The presentation of findings involves the use of Shona terms which is a local language spoken in the Chimanimani area. The English meaning of the Shona terms is also provided.

6 Understanding of the concept of resilience

This study established that participants had an adept understanding of the resilience concept owing to their experiences. As such, rural people in the Chimanimani district understand and conceptualise resilience as *kutsunga/ kutsungirira* (to persevere or perseverance). To them, *kutsungirira* means they must withstand the ongoing changes and disturbances. As such, the construction of resilience as perseverance instils a mental fortitude to bounce forward in the face of disturbances. The findings of this study established that the construction of resilience as perseverance is hinged on the acknowledgement that disturbances, shocks, and stressors are a part of human life. Through perseverance, individuals do not allow themselves to be suppressed by circumstances but have to forge ways of responding to any threat. The following narrations summarise this.

> … We best understand resilience as kutsungirira because problems are a part of the living and we have to endure them. You see, all these environmental hazards we face, we know they will always come, but we must not allow them to destroy us… (FGDs 1, 3 and 6; Nechirinda, Ngorima, and Chikukwa)
>
> …I understand resilience as resistance and perseverance, even when in a hazardous-prone area. How we live in the hazard-prone areas means we are resistant and we can persevere, which is resilience (FGDs 4 and 5 Chimanimani and Bvumbura).
>
> …Resilience is what makes us prepare for how to deal with our problems. With these ongoing changes if we fold our arms, the worst can happen even beyond what cyclone Idai did to us… (Traditional Leader 2, Tiya).

The study further established that rural people's understanding of resilience is not skewed towards the predominant Western or top-down conceptualisation of resilience, where the concept is rigidly anchored on affective anticipative, absorptive, mitigation, adaptative and transformative abilities (Bahadur et al. 2013; Kruse et al. 2017; Berkes et al. 2021). As such, literature heavily challenges the conceptualisation of resilience as perseverance (*kutsungirira*). Scholars such as Torabi et al. (2018) and Ngwaru and Niboye (2020) infer

that the notion implies making friends with the disturbance while ignoring the essentiality of transformation and continuous learning that addresses the root causes of disasters or exposure to climate change related-hazards However, for rural communities in the Chimanimani, *kutsungirira* is coupled with a combination of miscellaneous measures to prepare for and withstand uncertainty as informed by their social and cultural contexts. This challenges the notion that perseverance means passivity. The following excerpts provide further insights.

> …Resilience is all about enduring hardships, and we cannot endure these hardships while folding our arms; we must do something. We have received information on what to do before and during floods and cyclones, how to avert hunger and poverty… (FGDs 6 and 8; Chikukwa and Nhedziwa)
>
> …We appreciate the efforts being made to inform us about various hazards caused by the changing climate. Even the bible teaches us to endure any tribulation. You see us running up and down daily because we don't want to be caught unaware by these threats… (Traditional leader 4, Charleshood).

The findings further revealed that the generic conceptualisation of resilience is not applicable across contexts and cultures. Nevertheless, it emerged that most participants did not understand resilience from a technical perspective advanced by government and development agencies operating in the district. Notably, this does not signal that they face limitations in understanding what resilience encompasses. Rather, the study established that resilience is best understood in African terms (*kutsungirira*) as this resonates with their experiences. Understanding resilience as *kutsungirira* revealed that rural communities in Chimanimani district demonstrate an understanding of how to prevent, deal with, or put measures in place to reduce the severity of the impacts of the problems they face in their local scenarios.

7 The process versus outcome of resilience

In light of the ongoing debates on whether resilience is a process or outcome, this study further established how the participants understood the concept from their viewpoint. Consequently, it was found that most participants regard *kutsungirira* as an ongoing process determined by the dynamic problems people face. Most participants alluded that perseverance is not a once-off event but an ongoing attribute that must be applied in different life scenarios. The following narrations provide further insights.

> …When we talk about perseverance, it means kumira semusambangwena (standing firm like a willow plant) and, it's something that we always have to do during and after any threat… (Traditional leader 3, Nechirinda).
>
> …You cannot persevere today and stop as long you are still counted among the living. Problems will always come and that means we must not relax… (FGD 2, Chikukwa).

This study established that the participants were not very interested in differentiating between the process and outcome of resilience. Thus, considering resilience as (perseverance or *kutsungirira*) means the process dimension of resilience finds residence in their understanding of the concept.

8 Determinants of disaster and climate resilience building

The study further explored the determinants of resilience building for rural communities in the Chimanimani district. The following determinants emerged in the discussions with the participants.

9 Availability of natural and human resources

This study established that rural communities in the Chimanimani district have abundant natural and human resources as a cornerstone for resilience building. Firstly, it was established that resources such as agricultural land, timber plantations, forests, and water sources are critical resource bases for building resilience. Secondly, it was revealed in the FGDs, and through interviews that the majority of the population is rural-based, which cannot be ignored when considering the wealth of human resources (educators, community leaders, volunteers, farmers, small business owners, youths and elderly population) that rural communities possess. Some of the participants had the following to say;

> …We thank God for blessing us with the land, forests, and rivers. Having these means, we have a starting point despite the harsh environmental conditions that damage or destroy our God-given resources... (Traditional leader 1, Bvumbura).

> …Despite our other challenges, we have a rich natural resource base and still receive better rainfalls. With sufficient support and skills, we capitalise on our resources and turn around our situations… (FGDs 2, 5 and 6; Tiya, Bvumbura, and Chimanimani).

> …I think we have a strong backup of various experts who give us guidance and contribute to the development of our communities, especially after destructions… (FGDs 3 and 5; Bvumbura and Ngorima)

Based on the above narrations, this study put forth that the availability of human and natural resources enables building resilience to natural hazards, disasters and climate change risks. These resources underpin the capacities and abilities which enable the communities to identify and act on community concerns.

10 Collective efficacy

Collective efficacy emerged as another essential resource essential for resilience building for rural communities in the Chimanimani district. The findings revealed an invaluable sense of unity, mutual support, responsibility, and collaboration in identifying common community problems and fostering collective action to address them. The main thread from the FGDs affirmed that a sense of collective efficacy is stimulated by a sense of urgency in the face of failures by the government. As such, communities come together with a sense of shared understanding to find solutions against any disturbance. It was contended that collective efficacy is rooted in social networks, relatedness, and networks which serve as a cornerstone for willingness, shared perceptions, and understanding of the need to support each other in times of adversity. Some of the participants had the following to say;

…We encountered a series of disturbing events in our communities but these have made us believe that makudo ndimamwe panjodzi anorwirana (baboons are one, they fight for each other when danger strikes) (Traditional leader 2, Tiya).

…Following the proverb, chara chimwe hachitswanye inda (one finger cannot crush lice), we always identify and solve. Sometimes we do not even allow our diverse political affiliations to stand in the way of coming together and solving our common problems… (FGDs 5 and 8 Nechirinda and Chimanimani).

…Yes, the government is playing its role, but we have a sense of responsibility as we do not want to be always spoon-fed. We are masters of our destiny. Our unity is our strength, and we have always demonstrated that during floods and cyclones… (FGDs 2, 4 and 7; Charleshood, Tiya, and Bvumbura)

In light of the above statements, it is noteworthy that collective efficacy available among rural people is a product of operative social capital, which breeds common interest, social cohesion, solidarity, collective decision-making and a sense of belonging. From the participants' viewpoint, collective efficacy serves as a vehicle on which other determinants of resilience building can flourish.

11 Support systems from government and development agencies

In describing some of the determinants of resilience building, most participants acknowledged the role played by several government departments and development agencies operating in the district. From this, the study established that the Chimanimani district has commendable support systems dedicated to resilience. In light of this, government Ministries and NGOs offer training programmes, enhancing capacity building, and technical assistance on resilience development in the Chimanimani district. The Government ministries such as the Ministry of Local Government and Public Works, Ministry of Women Affairs, Community, Small and Medium Enterprises, Ministry of Youth, Sport, Arts, and Recreation, Ministry of Climate, Environment, Tourism and Hospitality Industry are making concerted efforts to stimulate community local level action against natural hazards, disaster and climate change risks. Some participants had the following to say;

…Yes, we have received training on disaster risk management. For instance, in this community, a budget pool is mobilised by community members for disaster risk management. So, most people received training on that… (FGDs 2, 3, 7 and 8 Ngorima, Nechirinda, Tiya, Chimanimani, and Tiya).

…We now have a community radio (Chimanimani FM) that is used to send early warning systems and updates on other potential hazards. We also have community research centres with free Internet… (FGD 6, Chikukwa).

…Yes, we have attended several workshops on resilience building as well as how to prevent the severity of the damages caused by hazards. That is why I am nodding my head as you are asking… (FGD 7, Chimanimani).

In light of the above, it also emerged in this study that organisations such as TSURO TRUST, CARITAS, UNOPS, Care International, Action Aid, World Vision, and Welt Hunger Hilfe are making sterling efforts to improve DRR preparedness and functional early warning systems at, district, community and school levels through forecast-based action

and financing mechanisms in the district. In their diverse standpoints, organisations such as Welt Hunger Hilfe and CARITAS support contingency planning and preparedness for response protection of livelihoods, assets, and critical facilities. Furthermore, CARITAS and Care International are championing the Strengthening Disaster Preparedness Structures and Systems in Zimbabwe program. Their roles involve supporting resilient livelihoods through empowerment projects such as horticulture, poultry, and field crop production. Further, organizations such as TSURO TRUST and World Vision focus on information, communication, public awareness of hazards, capacity development risk analysis and early warning. On the other hand, organisations such as UNOPS are developing piped water schemes and constructing resilient infrastructures by teaching civil engineering techniques to communities to enable self-sufficiency in future. This study also noted the role played by Agricultural Technical Extension (AGRITEX) which is a government institution responsible for promoting farming practices that reduce the impact of climate change, such as minimum tillage, composting, intercropping, and crop rotation. At the behest of services rendered by developmental agencies, it was also found that communities such as Chikukwa have a community-based structure (Chikukwa Ecological Land Use Community Trust) premised on promoting sustainable land use mechanisms in pursuit of resilience.

12 Indigenous Knowledge Systems (IKS)

This study further established that rural communities in the Chimanimani district are endowed with invaluable and indispensable indigenous knowledge, which serves as a cardinal capital in managing climate change-induced and disaster shocks. Responses from FGDs and interviews affirm that the inhabitants of the Chimanimani district have unique practices on land use, disaster management, climate change adaptation, and water management, which are models for building disaster and climate resilience. It was further revealed that rural communities in the Chimanimani district use environmental indicators such as the behaviour of animals, tree phenology, wind direction and the colour of the sky to forecast weather conditions. This informs them to put preparatory measures in place whether in anticipation of good or poor harvests. From the viewpoint of traditional leaders, indigenous knowledge inculcates a sense of responsibility for natural resources through the belief that ancestral spirits are custodians of water bodies and forestry resources, including flora and fauna. In a similar stewardship approach, there is a high-stern observation of geographical places deemed sacred, which serves as a preservative measure to the ecosystem. Through indigenous knowledge systems, this study noted that rural people have capacities for self-governance and decision-making processes. The following statements confirm this;

> …Yes, we have the knowledge that we inherited from our forefathers. We have always managed the impacts of previous cyclones before external help could come through… (FGDs 3, 6 and 8; Ngorima, Chikukwa, and Nhedziwa)

> …We have the knowledge that is cross-cutting in solving our diverse problems. In the absence of technological advances, we still use traditional medicines to treat crop and livestock diseases…. (Traditional leader 1, Bvumbura).

> … We still follow cultural practices, such as doro reMakoto (beer brewing for rain-making ceremonies). There is a level of moral order that contributes to the overall well-being of our communities. For example, cutting off big trees, throwing objects

into water bodies, and use of certain plants for firewood is prohibited… (Traditional leader 4, Charleshood).

This study found that IKS is used for agriculture, education, life, health, food preparation, disaster recovery, and climate change adaptation, which contribute to overall community resilience. In the FGDs across all study sites, it was submitted that most smallholder farmers use cow dung, chicken manure, and crop residues to fertilise the soil and boost their yields in pursuit of food security. From the viewpoint of Reniko et al. (2018), IKS enables at-risk communities to continuously accumulate experiences that enable them to cope with crises, collectively respond to hazards, and promote resilience.

13 Livelihood diversification

The bourgeoning uncertainties and risks of climate change have made rural communities in the Chimanimani district diversify their livelihoods. Through training from government and development agencies, most participants (community members) acknowledged that they are now embarking on a diverse combination of activities to compensate for the losses that spring from a single livelihood strategy, such as rain-fed agricultural production. This study established that most rural people are embarking on farm and off-farm activities to reduce vulnerabilities and increase income streams from various occupations. In the farming trajectory, rural communities are diversifying their cultivation practices and prioritising drought-tolerant crops such as small grains. It further emerged that government and development agencies are supporting the diversification of livelihoods to enable communities to spread risks in the face of climate change and disasters. Other alternative activities that emerge from the discussions include apiculture, poultry production, rabbit rearing, casual labour in the timber, tea, and coffee plantations, livestock rearing, and petty trading of fruits, vegetables, and potatoes. Furthermore, livelihood activities such as local savings and credit groups (*mikando*) were mentioned. The following statements give further insights on this;

…We can no longer keep our eggs in one basket because we do not know what tomorrow holds. We have to do a lot of incoming generating activities… (FGDs 5 and 6 Chikukwa and Chimanimani).

…With the training and various initiatives from the government and other agencies, we are embarking on diverse farming methods and other projects to redeem ourselves from being dependents… (Traditional leader 2, Tiya).

According to most participants, embarking on diverse livelihood portfolios is essential for strengthening self-organisation which is another element of resilience. On that note, by developing diverse livelihood options community members adapt to changes and improve their socioeconomic and environmental conditions.

14 Discussion

This study aimed to explore the determinants of resilience building in Zimbabwe's rural communities from the viewpoint of the participants and to determine how rural communities in Zimbabwe construct resilience. The findings first unearthed how the participants

understood the concept of resilience. In this view, it emerged that in the Chimanimani district, resilience is best understood as *kutsungirira* (perseverance). Their understanding of resilience as kutsungirira is complemented by taking measures to prevent, deal with, or put measures in place to reduce the severity of the impacts of the problems they face in their local scenarios. This contrasts with the submissions of Hellman and Shandas (2020), who posit that the resilience concept is not translatable to African vernacular languages. Drawing from the findings of this article, the researchers argue that the notion that resilience is not translatable to African languages stems from top-down concerted efforts to coerce and dictate what resilience should mean across cultures and contexts. In most cases, preparedness, absorptive, adaptive, and transformative capacities at individual and community levels are revered as solid indicators of resilience (Berkes et al. 2021). On that note, the understanding of resilience as perseverance (kutsungirira) is criticised (Ngwaru and Niboye 2020) because it suggests rolling with the punches while disregarding the importance of the capacities mentioned above. However, this study contends that there is no linear method of developing resilience capacities. As such, the understanding of resilience as perseverance, presupposes that rural communities in Zimbabwe understand that they will experience perturbations and that they must act to reduce exposure to natural hazards, disasters and climate change casualties.

The findings reveal that there can never be a universally agreed definition of resilience. Rural communities' failure to align with the technocratic or theoretical definitions of resilience does not signal limitations in understanding what resilience encompasses. In light of this, rural communities in the Chimanimani demonstrated an expert understanding of resilience as informed by their contexts. While exploring the participants' understanding of the resilience concept, it also emerged in this study that the process dimension of resilience finds residence in the conceptualisation of resilience as *kutsungirira*. On that note, perseverance is perceived as an ongoing process that requires communities and individuals to prepare for, withstand, endure and move forward (bounce-forward) in the wake of perturbations (Manyena 2016). Despite findings pointing to the process-oriented resilience *kutsungirira*, some participants did not align their understanding of resilience with any dimension (process or outcome). Extrapolating from this, the study infers that resilience is about producing positive outcomes and it is achieved in practice rather than relying on Eurocentric/Western ideological compartmentalisation of the concept.

The study further established the determinants of resilience to disasters and climate change risks. Firstly, the availability of human and natural resources as a determinant means rural communities can innovate and acquire the skills and knowledge necessary for preparedness against uncertainties and shocks. Since rural communities rely heavily on natural resources for livelihoods, access to land, forests and water sources can assist communities to recover and rebuild after disasters and climate change-related perturbations. Deducing from this, the study infers that this signals prospects of bouncing forward as these resources enable communities to self-organise and reorganise themselves as capable and knowledgeable in the face of adversity. According to the resilience theory, the availability of diverse resources enables community members to rebuild their communities, recover from losses, and reconstruct their livelihood strategies, which represents a bouncing forward ability (Manyena et al. 2019). Support systems from government and development agencies emerged as another determinant of resilience in Chimanimani. This study denotes that support systems from the government and development agencies are instrumental in building resilience. Furthermore, the availability of disaster preparedness programs, early warning systems, safety nets, capacity-building mechanisms, and education contribute to the ability of rural communities to respond and recover from natural

hazard-induced shocks. Thus, the diverse initiatives championed by various agencies operating in the Chimanimani district stimulate local-level action and ensure that necessary assistance and resources are available to help rural communities bounce forward.

The findings demonstrate that collective efficacy plays a critical role in promoting resilience. In the Chimanimani district, collective efficacy fosters togetherness, mutual support, collective decision-making processes, information and resource sharing, and community-based problem solving, enabling communities to better withstand and bounce forward from challenges. Yaméogo et al. (2018), assert that communities with an indispensable sense of collective efficacy develop a pro-social orientation coupled with cooperativeness, sharing, and helpfulness, which can contribute to strengthening community resilience. Concerning indigenous knowledge systems as a determinant of resilience, this study denotes that the manifestation of indigenous knowledge in agricultural practices, natural resource management, ecosystem restoration, and medication is invaluable in helping rural communities address diverse challenges and adapt to environmental changes. Therefore, leveraging this knowledge signals a bouncing-forward ability for rural communities, as they can recover and thrive after facing natural hazards-induced disasters and climate change aberrations. This gives credence to Sharifi and Yamagata (2016) who denote that IKS is the fundamental capital for rural people, enabling contextual solutions to local challenges. The study further noted that livelihood diversification is another determinant of resilience in the Chimanimani district. In light of this, embarking on diverse livelihood portfolios allows rural communities to bounce forward by cushioning their livelihood assets from the impact of external stressors. This study argues that livelihood diversification provides rural communities flexibility and alternative livelihood means during and after disturbances. Furthermore, communities with diverse livelihood means can self-sustain and exercise some degree of autonomy and self-sufficiency as bouncing forward abilities. In support, Tirivangasi et al. (2023) affirm that livelihood diversification allows rural communities to thrive in the face of natural hazards, disasters and climate risks.

In light of the explored determinants of resilience, this study infers that the determinants are interconnected and mutually reinforce one another in holistically promoting community resilience to natural hazards and extreme weather events. The study recommends that these determinants be complemented by access to technology, resilient community infrastructures, robust social protection systems, hazard risk assessment participatory processes by rural communities, and effective emergency and health services, among other contingent measures essential for community resilience. That said, rural communities' understanding of the availability of the determinants of resilience creates fertile ground on why disaster and climate resilience building must be people-centred. This is because rural communities are knowledgeable of the capacities and resources at their disposal to build resilience. Further, they are also knowledgeable of what works in their context. This points to why resilience building should follow a bottom-up approach instead of top-down measures that do not resonate with the lived realities of rural communities in Zimbabwe.

15 Conclusion

This study highlights the importance of exploring the concept of resilience from a people-centred perspective. Data gathered through interviews established the determinants of resilience against disasters and climate change from the viewpoint of the participants. Moreover, the study established how resilience is understood at the local level highlighting

that rural communities have an expert understanding of what it means to be resilient as informed by their social and cultural contexts. Their understanding of the resilience concept and ability to identify the determinants of resilience is a step forward in ascertaining the importance of developing policies that bear localised African-centred definitions of resilience. However, resilience-building initiatives championed by the government and development agencies in Zimbabwe rely on the technocratic conceptualisation of resilience, which disregards the unique local experiences and contexts where resilience is practised. The study surfaces that the understanding of resilience cannot be skewed towards the technocratic theories of the concept because what resilience means differs across cultures and contexts. Indeed, rural communities in this study demonstrate an adept understanding of the determinants of resilience and what resilience means to them. Therefore, the importance of people-centred approaches is a key to collating valuable knowledge in building resilience in Zimbabwe. In light of the preceding, this study infers that since rural communities in the Chimanimani District can construct what resilience means in their context and the determinants of resilience available to them, what requires more exposition is the perceived importance of people-centred approaches in resilience building in Zimbabwe.

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Declarations

Competing interests The authors declare no financial or non-financial competing interests.

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