

Case Report

Assessing Indicators of Social Vulnerability in Tanzania: A Comprehensive Analysis

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Abstract

Social vulnerability indicators are critical understanding and addressing differences in experience and recovery from environmental hazards. In Tanzania, these indicators are particularly relevant because the country faces various natural and socioeconomic challenges. The aim of this manuscript is to outline the key measures of social vulnerability in the Tanzanian context based on the literature and studies. Introduction: Similar to many developing countries, Tanzania faces a variety of challenges that exacerbate the social vulnerability of its population. Factors such as poverty, limited access to education and inadequate health systems contribute to the country's vulnerability to environmental shocks and extreme events. Understanding and measuring social vulnerability is critical for effective policymaking and risk reduction efforts. Methodology: The methodology includes a review of the literature on indicators of social vulnerability, with a focus on those applicable to the Tanzanian context. Criteria are established for evaluating these indicators to ensure that they are consistent with the theoretical framework and have internal consistency. Results: The Social Vulnerability Index (SoVI) is a widely used measure, although its application is limited to specific contexts such as Tanzania. Other studies emphasize the connection between government-identified indicators of child vulnerability and access to education and provide insights into additional factors that predict educational vulnerability. In addition, social protection programs in Tanzania provide a range of potential indicators of vulnerability that can be used to help monitor the progress of poverty reduction strategies. Discussion: This discussion addresses the implications of these findings for Tanzania's policy and planning. This emphasizes the need for context-specific measures that accurately reflect the country's unique socioeconomic and cultural landscape. Conclusion: This manuscript highlights the importance of developing reliable and contextually relevant indicators of social vulnerability for Tanzania. Such measures are crucial for developing targeted interventions and strengthening the resilience of vulnerable populations to environmental and socioeconomic threats.

Keywords

Social Vulnerability, Tanzania, Environmental Hazards, Policy, Resilience

1. Introduction

Social vulnerability, a rapidly evolving concept among scholars, policymakers, and global factions, refers to the extent to which communities are exposed to particular threats.

Regardless of their geographical location, communities around the world must be prepared to respond to the threats that surround them. A community's resilience in responding

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to these threats is largely determined by its level of social vulnerability. Understanding Social Vulnerability: Social vulnerability is determined by a variety of factors, including poverty levels, access to resources, political power, social capital and networks, attitudes toward disasters, vulnerability of settlements and neighborhoods, individual frailty and physical limitations, and access to critical services. This concept has attracted the interest of scholars from various disciplines, including geography, economics, sociology and development studies. It is defined as the characteristics of an individual or a group that influence their ability to anticipate, manage, withstand and recover from the effects of a natural hazard [2]. It refers to the vulnerability of social groups to potential losses from hazardous events and the resilience of society to hazards [3, 8, 5] further defines social vulnerability as the variation in a community's ability to deal with danger based on its position within the physical and social world. [7] describes it as the inability to take effective action against losses.

1.1. The Role of Social Vulnerability in Community Resilience

The role of social vulnerability in community resilience: The level of social vulnerability is a critical indicator of a community's resilience to surrounding threats [37]. Communities experience social vulnerability in different forms, with differences arising from control of available resources, capital, level of risk, risk awareness, level of education and cultural factors [38]. These differences explain why some individuals exhibit high resilience to threats while others exhibit low resilience, which explains the variation in threat response within a community [39]. For example, during the peak of the COVID-19 pandemic, some countries imposed full lockdowns because they had the resources to care for their citizens at home. In contrast, some countries implemented partial lockdowns, while others imposed no lockdowns at all [40]. This inequality highlights the power of resources at the individual, community and national levels [41]. A resource-rich community invests in disaster preparedness, mitigation, response and recovery [42]. However, disaster preparedness, which involves protecting communities from hazards, requires financial resources that are often insufficient in most developing countries. Education provides opportunities to address hazards, but public education against disasters requires financial and human resources. The risk also varies significantly from individual to individual and from community to community. For example, people/communities living in the foothills of Mount Uluguru are at greater risk of landslides than people living in Kihonda in the same region. The community's ability to respond to any threat is determined by financial strength, policy, access to information, risk prevention and mitigation, and the level of social vulnerability.

1.2. Social Vulnerability in Developing Countries

In developing countries, statistics on social vulnerability are often limited, leading to the argument that indicators of social vulnerability are not well documented in Tanzania [43]. Social vulnerability reveals the conditions under which society lives and which expose it to particular risk [44]. Due to Tanzania's geographical context characterized by physical, social, economic and environmental vulnerabilities, there are many hazards, such as earthquakes, floods, transportation hazards, drought, traffic accidents, landslides and other hazards. This expanded understanding of social vulnerability provides a comprehensive framework for assessing and addressing these challenges in the Tanzanian context. Understanding the social dynamics within a community is crucial not only for the government but also for the community members themselves [45]. This understanding serves as a barometer of a community's resilience and effectiveness, particularly in times of crisis such as during, before and after a disaster [46]. The level of social performance of a community forms the foundation on which any development program must be built [47]. This social performance determines the community's ability to respond to and recover from various challenges [48]. However, there is a clear gap in research on the extent of social vulnerability in Tanzania. This dimension is a critical factor that influences a community's ability to withstand and recover from adversity. This study aims to fill this research gap. The aim is to provide a comprehensive understanding of the social fabric of the community and its ability to cope with and recover from adversity.

General Objective The main objective of this project is to conduct an in-depth analysis of social vulnerability indicators in Tanzania. The aim is to develop strategies that can effectively reduce these vulnerabilities to a socially and economically acceptable level. This includes identifying the most pressing vulnerabilities, understanding their root causes and proposing sustainable solutions. The findings of this study have significant implications for a wide range of stakeholders, including policy makers, government agencies, nongovernmental organizations (NGOs), community-based organizations (CBOs) and others involved in social development initiatives in Tanzania. The findings serve as a critical resource for formulating programs and policies to mitigate social vulnerabilities. Furthermore, it will make a significant contribution to the literature on social vulnerability in Tanzania, a topic that has not been extensively studied, particularly in the Tanzanian context. Without such research, community resilience remains an unknown factor, posing potential risks to populations in vulnerable areas.

2. Materials and Methods

The methodology of this study is primarily based on the extensive use of online secondary data, particularly the 2012

and 2022 census data provided by the National Bureau of Statistics. These data are publicly available, open source and a credible and reliable source of information in Tanzania. Additional sources such as internet resources, blogs, reports, books and academic articles are also used to supplement the census data. This study measured a comprehensive set of eleven areas of social vulnerability. These include social resources, human resources, material resources, capital resources, urban share, tenure, access to medical services, family structure, demographics, socioeconomic status and income. Each domain is further divided into 45 subdomains, all of which are measured in detail in this study. This approach ensures a comprehensive and nuanced understanding

of social vulnerability in Tanzania and paves the way for effective interventions.

2.1. Profile of Tanzania

Geographical location of Tanzania

The United Republic of Tanzania, as we know it today, was formed on April 26, 1964, through the union of two independent countries, Tanganyika and Zanzibar. This historical merger marked the birth of a new nation, which is nestled between 1° and 12° south of the Equator and between 29° and 41° east of the Prime Meridian, also known as the Greenwich Meridian.



Figure 1. Map of Tanzania showing the geographical location of the boundaries.

With an area of 945,087 square kilometers, Tanzania is a vast country with diverse geographical features and climates. It borders several countries: in the north, it borders Kenya and Uganda; to the west, it borders Rwanda, Burundi and the Democratic Republic of Congo (formerly known as Congo Kinshasa); to the southwest, it borders Malawi and Zambia; in the south, it meets Mozambique; and to the east, it is bounded by the vast expansion of the Indian Ocean. There are three major lakes in Tanzania: Lake Victoria, Lake Tanganyika and Lake Nyasa. These lakes not only contribute to the country's unique geography but are also home to a rich diversity of aquatic life and serve as vital water resources. The climate in Tanzania is predominantly tropical, characterized by heavy rainfall during the monsoon season and warm temperatures throughout the year. This climate supports rich biodiversity and a variety of ecosystems, from lush rainforests to arid savannahs. Demographically, Tanzania will have a population of approximately 64 million people in 2024 [1]. This population is incredibly diverse and consists of 126 different tribes, each with their own unique traditions, cultures and languages. Despite this diversity, there is a sense of unity and national identity, largely due to the widespread use of Swahili. Swahili, the national language, is spoken by the majority of the population and serves as a common linguistic thread that runs through the rich fabric of Tanzanian society.

2.2. Theoretical Underlying the Assessment of the Variables

Assessing vulnerability is a multifaceted task because it involves numerous variables, some of which are difficult to quantify. In addition, direct vulnerability measurement is particularly complex because it involves a variety of aspects. In this scenario, individual characteristics such as socioeco-

nomics status and disabilities that place the individual at risk are assessed to determine the level of vulnerability. Social vulnerability is assumed to be the cumulative effect of individual vulnerability. [6] suggested that the physical and social domains are interconnected in terms of vulnerability and resilience. The data they refer to are mainly divided into two categories: individual variables (education, age and gender) and community-level variables (population growth, quality of infrastructure and rural-urban separation). Individual variables are aggregated into community data, while community variables are consolidated and analysed upon receipt. In a study by [4], five cluster indicators were used to calculate social vulnerability to flooding in the city of Vancouver. These indicators include coping skills, access to resources, budgeting, public transportation, and the building environment. Some researchers use principal component analysis to extract factors and create a social vulnerability index. Ultimately, areas are categorized based on the standard deviation (SD) from the mean. Other researchers classify areas into five categories based on quintiles: high (>1.5 SD), medium-high (0.5 to 1.5 SD), medium (-0.5 to 0.5 SD), medium-low (-1.5 to 0.5 SD) and low (<-1.5 SD).

In addition to these methods, vulnerability assessment also includes understanding the adaptive capacity of individuals and communities. Adaptability is the ability of individuals, communities, or systems to adapt, modify, or change their characteristics or actions to mitigate potential harm, take advantage of opportunities, or deal with the consequences of shock or stress [49]. This can be influenced by factors such as access to information and resources, social networks and institutional support. Therefore, a comprehensive vulnerability assessment should consider both the potential risks and the adaptive capacity of the individuals or communities being assessed [49].

Table 1. Theoretical underlying the assessment of the variables.

Domain	Subindicators	comments
Income	GDP per capital	< Decrease Vulnerability
	Average monthly salary	+— vulnerability
	Unemployment level	Increase vulnerability
	Saving	Decrease vulnerability
	Debts	Decrease vulnerability
	Types of income	+— vulnerability
	Number of dependent	< Decrease vulnerability
Social -economic	Occupation (Professional level)	< Decrease vulnerability
	Occupation-open space (Agricultural construction)	< Decrease vulnerability
	Economic sector [resources extraction]	Increase vulnerability

Domain	Subindicators	comments
Demographic	Age [proportional of youth and elderly population]	+— vulnerability
	Gender	+— vulnerability
	Education	Increase vulnerability
	Special need/disability population	>Increase vulnerability
	Vulnerable minorities	Increase vulnerability
	Immigrants	Increase vulnerability
	Rapid population growth	Increase vulnerability
Family structure	Single-parents' households	Increase vulnerability
	Single-member households	Increase vulnerability
	Large families	Increase vulnerability
Medical services	Number of medical personnel per capita	< increase vulnerability
	Number of hospitals per capita	< increase vulnerability
	Average distance from nearest hospital	>increase vulnerability
Urban	Percentage of urban	Increase vulnerability
Renters	Percentage of renters	>increase vulnerability
	Population density	>increase vulnerability
Social capital	Attachment to a place	Decrease vulnerability
	Perceived level of social support	Decrease vulnerability
	Civil participation	Decrease vulnerability
	Land	>increase. vulnerability
Materials resources	Livestock	Decrease vulnerability
	Household/apartment	>increase vulnerability
	Durable goods	>increase vulnerability
	Quality of house.	>increase vulnerability
	Education attainment	>increase vulnerability
	Quality of education	>increase vulnerability
	employment	>increase vulnerability
Human resources	Types of employment	+— vulnerability
	Health status	+— vulnerability
	Chronic illness	>increase vulnerability
	size	>increase vulnerability
	Social network	<increase vulnerability
	Status	+— vulnerability
	connection	>increase vulnerability
Social resources	Sources of information	>Decrease vulnerability
	Means of communication	+— vulnerability
	Presence of association	>Decrease vulnerability
	Variety of association	>Decrease vulnerability

Demographic and social indices: This subindex takes into account factors such as age, population density, proportion of foreigners, level of education and type of housing. These factors are critical to understanding the social fabric of an area and its susceptibility to landslide hazards.

Damage trigger index: This subindex included the number of civil servants, the ratio of road area, the number of electronic supply facilities, the ratio of school areas, and the ratio of commercial and industrial areas [8]. These factors can potentially cause damage during a landslide event.

Preparedness and Response Index: This subindex considered disaster frequency, the internet penetration rate, the number of disaster preparedness facilities, perceived safety, the number of doctors, and financial independence [48]. These factors measure a region's preparedness and ability to respond to landslide threats.

The researchers assigned specific weights to each subindex and variable, acknowledging that the impact of each factor can vary significantly depending on the specific hazard, location, or country. However, they also noted that some variables might be universally applicable across all regions.

The team used a wide range of indicators, including demographic, socioeconomic, family structure, medical care, city infrastructure, tenant status, social capital, per capita income, material resources, human resources, and social resources [18].

These indicators were categorized based on whether they increased or decreased social vulnerability. Some indicators play a dual role by reflecting the percentage of vulnerability. Table 1 below highlights the indicators that increased social vulnerabilities (marked in blue) and those that decreased vulnerabilities (marked in green).

3. Findings and Discussion

Table 2. Major findings.

Domain	Subindicators	Assessment	comments/Results
Income	GDP per capital	GDP in Tanzania is \$1123 [1]	<Decrease Vulnerability
	Average monthly salary	The average monthly salary in Tanzania is approximately 1,270,000 TZS. Salaries range from 319,000 TZS (lowest average) to 5,640,000 TZS (highest average, actual maximum salary is higher).[31]	Reduces vulnerability
	Unemployment level	The unemployment rate in Tanzania for 2022 was 2.60% which is low but increases vulnerabilities [33]	Increase vulnerability
	Saving	Gross domestic savings as a percentage of GDP in Tanzania was reported at 36.7% in 2022 [31]	Decrease vulnerability
	Debts	The national debt in Tanzania was forecast to continuously increase between 2024 and 2029 by in total 17.8 billion U.S. dollars (+47.67 percent). After the tenth consecutive increasing year, the national debt is estimated to reach 55.1 billion U.S. dollars [26]	Increase vulnerability
	Number of dependent	The age dependency ratio in Tanzania was reported at 86.78% in 2022 [28]	Increase vulnerability
Social-economic	Female (Professional level	The female labor-force participation rate rose from 67% in 2000 to 80% in 2019, well above the average of 63% for Sub-Saharan Africa and among the highest rates on the continent [32]	< Decrease vulnerability
	Occupation-open space (Agricultural construction]	The construction industry in Tanzania is expected to grow by 5.8% in real terms in 2024 [31]	< Decrease vulnerability
	Economic sector [resources extraction]	The extractive sector, including mining, is a significant part of Tanzania's economy [25]	< Decrease vulnerability
	Age [proportional of youth and elderly population]	The median age in Tanzania is 17.0 years. This indicates a young population [9]	< Decrease vulnerability
	Gender	As of 2021, Tanzania's female population was slightly higher	< Decrease vulnerability

Domain	Subindicators	Assessment	comments/Results
		than the male one [35]	ity
	Education	The gross enrollment rate for secondary education in Tanzania was 28% in 2021 [9]	Increase vulnerability
	Special need/disability population	In Tanzania, the 2012 Population and Housing Census recorded that 9.3 percent of the population lives with a disability[44]	>Increase vulnerability
Demographic	Vulnerable minorities	As of 2022, nearly 26 million people in Tanzania lived in extreme poverty [11]	Increase vulnerability
	Immigrants	as of January 2024, the inumber of immigrant stand at 0.7% [30]	< Decrease vulnerability
	Rapid population growth	The current population of Tanzania in 2024 is 69,419,073, a 2.94% increase from 2023 [1]	Increase vulnerability
Family structure	Single-parents' households	it was estimated 38% of household in 2022 were single parent [10]	Increase vulnerability
	Single-member households	NIL	
	Large families	by 2022 family size of Tanzania is 4.2 people[14]	Increase vulnerability
	Number of medical personnel per population	By 2019 one doctor serves 20,010 people[23]	<increase vulnerability
Medical services	Number of hospitals per capita	basing on estimate 2022, one hospital serves180,000 people [23]	<increase vulnerability
	Average distance from nearest hospital	66.4% Tanzania access facilities within 5 kilometers [23]	>increase vulnerability
Urban	Percentage of urban	As of 2024, approximately 38.0% of the population in Tanzania is urban [16]	< Decrease vulnerability
	Percentage of renters	As of 2013/14 the renting ranges from 7.5% to 9.1% [14]	>increase vulnerability
Renters	Population density	The population density of Tanzania in 2024 is estimated to be 73.28 people per square kilometer [17]	< Decrease vulnerability
	Attachment to a place	Attachment to a place, and civil participation can decrease vulnerability by fostering community resilience [12]	Decrease vulnerability
Social capital	Perceived level of social support	Perceived level of social support, decrease vulnerability by fostering community resilience [12]	Decrease vulnerability
	Civil participation	Civil participation can decrease vulnerability by fostering community resilience [10]	Decrease vulnerability
	Land	Land: Approximately 44.62% of the land area in Tanzania was reported as agricultural land in 2021. Arable land, which is suitable for growing crops, made up approximately 15.24% of the land area in the same year [20]	>increase. vulnerability
Materials resources	Livestock	According to the National Sample Census of Agriculture 2019/20, Tanzania has 33.9 million cattle, 24.5 million goats, 8.5 million sheep, and 87.7 million poultry [20]	Decrease vulnerability
	Household/apartment	Household/Apartment: The number of households in Tanzania was forecast to reach nearly 12.5 million in 2021 [22]	>increase vulnerability
	Durable goods	As os of 2022, Tanzania trade balance wa -3.16 B [18]	>increase vulnerability
	Quality of house.	It estimated that 33% of Tanzanian has electricity [21]	>increase vulnerability
Human re-sources	Education attainment	The percentage of the population that has at least a Bachelor's degree or equivalent was 1.548% in 2018 [29]	>increase vulnerability
	Quality of education	However, the literacy rate, while improved, is still not optimal,	>increase vulnerability

Domain	Subindicators	Assessment	comments/Results
Social re-sources		with approximately 76% of Tanzanians being literate in 2020/21 [17]	
	employment	As of 2021, 23.5 million people were employed in Tanzania [19]	Decrease vulnerability
	Types of employment	Skilled agricultural and fishery workers accounting for nearly 60 percent of the total employment between 2020 to 2021. Approximately 15 percent of employed Tanzanians possessed elementary occupations, while approximately 14 percent worked within service activities and shop sales [13]	Increases vulnerability
	Health status	Tanzania has a high burden of both communicable (such as malaria, tuberculosis, HIV/AIDS) and noncommunicable diseases (NCDs). The latter was estimated to have caused 34% of deaths in 2019. Malaria remains a significant health problem in Tanzania, with an estimated 8 million cases in 2021, resulting in 25,787 deaths [11]	Increases vulnerability
	Chronic illness	In 2019, the number of deaths from noncommunicable diseases (NCD) in Tanzania reached 110,596 [11]	>increase vulnerability
	size	The overall workforce in the sector increased from 90,873 to 98,553 [23]	>increase vulnerability
	Social network	As of 2024, Tanzania had approximately 5.65 million social media users, equating to 8.3 percent of the total population [17]	<increase vulnerability
	Access to social network	Tanzanian are free to use any social network [17]	>Decrease vulnerability
	connection	As of 2024, Tanzania had approximately 67.72 million mobile connections, corresponding to over 86 percent of the country's population [16]	>Decrease vulnerability
	Sources of information	The National Bureau of Statistics (NBS) provides a wealth of information on various aspects of Tanzania's socioeconomic status [32]	>Decrease vulnerability
	Means of communication	As of 2024, Tanzania had approximately 67.72 million mobile connections, corresponding to over 86 percent of the country's population [36]	>Decrease vulnerability
	Presence of association	The Tanzania Statistical Association (TASTA) is an example of an association in Tanzania [34]	>Decrease vulnerability
	Variety of association	There are various associations in Tanzania, such as the Tanzania Statistical Association (TASTA) and numerous Savings and Credit Cooperative Societies (SACCOS) [24]	>Decrease vulnerability

Considering the total number of variables assessed and finding that the percentage of those with increased (53%) vulnerability vs. those with reduced vulnerability (47%) increases vulnerability, social vulnerability is declining gradually due to the social and economic development of Tanzania. These variables are important for assessing the extent to which the revolutions of technologies and social, economic, political and cultural transformations are taking place. The objective is to reduce all factors that increase vulnerability. These findings will enhance social and economic resilience to human and natural hazards such as floods, earthquakes, landslides, famine, etc. The following is a summary of the

findings.

The GDP per capita of Tanzania is US\$1123, indicating low income levels [19]. Implication: Low income contributes to vulnerability, affecting access to resources, healthcare, and education [15]. The average monthly salary is approximately TZS 1,270,000 but varies significantly.

Implication: Income variability may impact susceptibility, but overall, it reduces vulnerability by providing some financial stability

The low unemployment rate (2.60%) is positive.

Implication: Any increase in unemployment could lead to increased vulnerability [27]. The socioeconomic factors in-

clude the number of dependent people (age dependency ratio). A high age dependency ratio (86.78%) increases vulnerability.

The increasing employment rate of women (80%) reduces their vulnerability to labor force participation. Employment in Open Spaces (Agricultural and Construction). Expected growth in the construction industry reduces vulnerability.

The economic sector (extraction of raw materials). The importance of the raw materials sector contributes to vulnerability. Age Distribution (Proportion of Young and Older Population). A young population reduces vulnerability. Gender Slightly more women than men may reduce susceptibility.

In terms of education, the low secondary school enrollment rate (28%) increases vulnerability. In terms of population factors, special needs/disability population (9.3% of people living with a disability) increases vulnerability. With respect to vulnerable minorities, nearly 26 million people experiencing extreme poverty experience increased vulnerability.

The low proportion of immigrants (0.7%) reduces vulnerability. Rapid population growth A population growth of 2.94% increases vulnerability.

With respect to family structure, for single-parent households, an estimated 38% of single-parent households increase vulnerability. The average family size (4.2 people) contributes to the risk. With respect to the number of medical staff per population, having one doctor caring for 20,010 people increases vulnerability due to limited healthcare access. Limited access to healthcare facilities can exacerbate health-related vulnerabilities. For the average distance to the nearest hospital, only 66.4% of respondents had access within 5 kilometers, which further contributed to vulnerability. Longer travel distances hinder timely medical care.

Urban Population Percentage: Approximately 38.0% of the urban population has reduced exposure to rural vulnerabilities. Urban areas often have better infrastructure and services. For the percentage of renters (tenants), between 7.5% and 9.1% are renters, potentially increasing their risk. Vulnerability may arise due to housing instability.

Population Density: With 73.28 people per square kilometer, the risk decreases. A higher population density can foster community support and resilience. Social Capital: Attachment to a place and perceived social support reduce vulnerability. Strong community ties enhance coping mechanisms. Citizen Participation: Active participation promotes community resilience and reduces vulnerability. Engaged citizens contribute to disaster preparedness.

Material Resources: Agricultural land covers 44.62% of Tanzania, potentially contributing to vulnerability. Diverse livestock resources mitigate risks.

Household/Dwelling: The projected increase in households (to almost 12.5 million) could heighten vulnerability. Housing quality and access to electricity play a role. Human Resources: Low education levels (only 1,548% with at least a bachelor's degree) increase vulnerability. Literacy rates impact overall well-being.

Employment patterns (skilled vs. menial jobs) influence

vulnerability.

Health Status:

Communicable and noncommunicable diseases contribute to vulnerability. Malaria remains a significant health challenge.

Social Resources: Social media users (8.3% of the population) may increase exposure. Access to social networks can impact information dissemination. Mobile connections (86% of the population) may reduce vulnerability.

Presence of Associations: The existence of associations such as the Tanzania Statistical Association (TASTA) fosters collaboration, knowledge sharing, and community resilience. TASTA, as an example, contributes to data-driven decision-making. Diversity of Associations (e.g., SACCOS): Various associations, such as the Savings and Credit Cooperative Societies (SACCOS), play a vital role in economic empowerment and social support. They enhance financial inclusion and reduce vulnerability by providing access to credit and community networks.

Education Level: The low percentage (1,548%) of the population with at least a bachelor's degree indicates limited access to higher education. This educational gap can contribute to vulnerability, affecting employment prospects and overall well-being. Quality of Education: Despite improvements, the current literacy rate of 76% remains suboptimal. Enhancing educational quality and promoting lifelong learning can mitigate vulnerability by empowering individuals with knowledge and skills.

Employment Patterns: Skilled workers in agriculture and fishing constitute a significant portion of employment (almost 60%). However, the diversity of employment types (including unskilled and service jobs) introduces vulnerabilities related to income and job security. Health Status: Tanzania faces a dual burden of communicable diseases (e.g., malaria, tuberculosis, HIV/AIDS) and noncommunicable diseases (NCDs). NCDs caused 34% of deaths in 2019. Addressing health disparities is crucial for reducing vulnerability. Workforce Size: An increase in the total workforce (from 90,873 to 98,553) may impact vulnerability. Employment opportunities, occupational safety, and social protection mechanisms play a role.

4. Conclusion

Assessment of various socio-economic and demographic variables in Tanzania shows a mixed picture of vulnerability: Increased vulnerability (53%): factors such as low GDP per capita, high age dependency ratio, low secondary school enrollment rate, high population growth and limited access to healthcare are contributing factors increased vulnerability. Reduced vulnerability (47%): Factors such as low unemployment rate, increasing female employment rate, expected growth in the construction industry, low proportion of immigrants and strong social capital contribute to lower vulnerability. As the country. We need to improve all 48 social indicators, research them, and evaluate them within two or three

years. This will determine the extent to which Tanzania is developing. This will encourage the transformation of private and public entities in social and economic development. More importantly, more research on a group of related variables is needed to elucidate these findings. More research is required for each theme out of the 48 variables

5. Recommendations

Economic Development: The government should increase income levels and reduce income fluctuations by promoting diverse economic activities and improving employment opportunities. In the education sector, the focus should be on increasing secondary school enrollment rates through targeted educational programs and incentives. Access to quality healthcare: Government, NGOs, CBOs and the community must work together to improve healthcare infrastructure and increase the number of medical personnel to ensure better access to healthcare services. Supporting vulnerable groups: expanding and implementing social protection programs for single parents, people with disabilities and people living in extreme poverty. Local government needs to develop urban areas with better infrastructure and services to reduce rural vulnerability. Finally, the practice of community engagement as a means of social transformation should be promoted and practiced to foster strong community bonds and encourage citizen participation to improve social resilience and disaster preparedness.

Abbreviations

NGOs Non-Governmental Organizations
CBOs Community Based Organizations

Author Contributions

Salum Haji Hamisi is the sole author. The author read and approved the final manuscript.

Conflicts of Interest

The author declares no conflicts of interest.

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