

Cultural and Livelihood Features Influencing the Occurrence of Land Slide in the Hanang Mountain in Manyara Northern Tanzania

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Abstract: *This paper reviews the disaster caused by collapse of some parts of Hanang Mountain (HM) that failed to withstand the compression triggered by weak rocks volcanic sediments after absorbing water. Presented information were obtained from extensive search of published literatures and unpublished reports, magazine on line sources related to the scenario and reviewing the implications of occurrence towards land activities. The paper is based on a widespread analysis related on repossession and analysis of grey and published literature as well as reported cases related to light and prolonged rainfall penetrates the ground saturating the soil and leading to mudslide. The study was carried out to manuscript nature and tendency of incidence evolving and occurrence in different parts of Tanzania. Previously landslides on HM had occurred in the early 2000 and the water that saturated soil as the cause of mudslide in the area was identified. This paper attempts to analyze the situation in Hanang as an experience in Tanzania that occurred over twenty years back. It was recommended that geologists should conduct training and provide education to the people surrounding the mountain concerning the nature of the rocks and the activities on land use information and changes; this knowledge is vital for understanding and for perceiving the global dynamics. Also, the clear policies on land use surrounding the mountain and water band should be known to them. This background presents an incident case study of Mountain Hanang in the Gingabi village in the town of Katesh in Hanang District in Manyara Region on 03rd December 2023.*

Abbreviation

HM Hanang Mountain

LC Livelihood Change

URT United Republic of Tanzania

1. Introduction

The social and economic environments dominating today in Tanzania entail individual difficulties on water and land; , the circumstances and its sustainability is in danger by society induced accomplishments. This study evaluated the cultural and livelihood factors that influence the occurrence of landslides in the HM in Manyara region, Northern Tanzania. Land ownership assortments and agriculture of cyclical harvests are among the major factors that influence landslide as they involve additional repeated soil disturbance, inadequate broken up concealment and increased risks of soil erosion and watershed insufficiency. Frequently digging on same land and semi – zero cropping system around watercourse series is a possible bad behaviour in crisis controlling particularly with accumulative individuals and livestock populace. The main livelihoods regarding to land use are different types of irrigated agriculture and domestic use particularly during dry season. Teaching and training opportunities to local communities can be an influential encouragement to protection of mudslide and manage land around the mountain around water banks. Clear policies on land use and precedence activities in the HM at the Gendabi village are so vital in order to avoid landslide among mountain besides water banks. This information is important for countries because most landslides and soil erosion are believed to occur around stream banks.

National land policy 2019 and review

Protection of sensitive areas over the last ten years is a concern because there has developed a tendency of allocating sensitive areas like small islands to individuals has developed. This practice has caused destruction to these sensitive areas. Even beaches are being privatized without due regard to environmental implication. It is indicated in the Tanzania Land Policy Statements (1995) Number 4.2.10 that: (i) Mechanisms for protecting sensitive areas will be created. Sensitive areas include water catchment areas, small islands, border areas, beaches, mountains, forests, national parks, rivers, river basins and banks, seasonal migration routes of wildlife, national heritage and areas of biodiversity. These areas or parts of them should not be allocated to individuals. (URT, 1995) . This means that the government have the aim of protecting all these areas by not privatize, because the government believe on protecting the areas.

2. Background Information

Tanzania community and living conditions prevailing today have seen through specific increase demand for land and competition for plots all over the county, not only land but with water banks.

Population growth especially in places around land surrounding water has upraised the demand for grazing and land cultivation made serious soil erosion complications. It is in areas such as Shinyanga, Mwanza, Morogoro and Arusha

where the effects of over population and grazing on the ecosystem are most practicable.

The National Land Policy 1995 and its review in 1997 have established for administrate and agreement. Changes in land use and the increase in human population over the last two and half decades has increased the demand for land and competition for plots especially in around major urban centers. According to the Tanzania government Land Policy 1997, Wetlands are considered as wastelands and are thought as being not useful for social and economic development. Wetland will be properly studied and proper land uses shall be determined. Wetland will be allocated to proper users (URT, 1995) .

National Land Acts declared of the hazardous land, "hazardous land is the development of which is likely to pose a danger to life or to lead to degradation of environmental destruction on that or contiguous land and includes but is not limited to wetland and off shore islands. Land within six meters of a river band or the shoreline of an island, lake, beach or coast. According to this Land Policy and Acts, the livelihood activities should not take place surrounding mountains like mountain Hanang (Uri et al., 2022) .

Various divisions of land practice in Tanzania are presently predictable to aspect land demand increases due to various reasons including climate change and water demand. Cultivating and livelihood has formerly been singled out as an area which jeopardies overhauling freshwater withdrawal in nine major water bowls of Tanzania for their corresponding levels of water shortage (Lyakurwa, Song, & Chen, 2014; Higgins & Caretta, 2022; Wang et al., 2016).

3. Literature Review

Mountain Hanang is made of soft rocks like the volcanoclastic sedimentary rocks. In the prolonged rain the mountain is unable to resist the compression and finally part of it bowed, sending tons of muddy waters that carried with it uprooted trees and rocks downstream towards Jordom River and this was the source of the problem that occurred.

Definition of Some term

Volcanoclastic sedimentary rocks are the products of volcanic rocks by weathering, transportation, and redistribution that can form dissolution and redistribution of silicon oxide in various forms. It is a universal and an important phenomenon in the process of soil formation, and mostly occur near the interaction zone of volcanic cones and lacustrine water bodies or around volcanic islands (Tilumanywa, 2013) . Redistribution

Livelihood change (LC), is defined as the process by which rural families construct a change portfolio of deeds and social support capabilities so as to survive and to progress in their standards of living (Dai et al., 2019) .

Geological Context

According to a geologist from the Ministry of Minerals, the source of the disaster was the collapse of part of the Mount Hanang that is featured with soft rocks that absorbed water and eventually causing a mudslide shown by the preliminary

information. The Tanzania Meteorological Authority (TMA) declared climate change, and numerous events in different regions of the country observed. But the mudslide circumstance that occurred in the Katesh town in Hanang District, Manyara Region, raised new alarm and left the residents in an indescribable state of sadness as reported in the Daily News Newspaper on December 3, 2023.

The landslide had took a toll on serious infrastructure, these included roads, bridges, and utilities. The government faced challenges to return the important services and implementing measures to prevent upcoming disasters. Infrastructure rehabilitation was a long - term endeavor requiring substantial financial and technical resources.

According to researchers (Delcamp et al., 2016, Giliba & Kayombo, 2011, Tilumanywa, 2013, Nonnotte et al., 2008) modern geochronological data on volcanic and sedimentary deposits in different areas of northern and southwestern Tanzania suggest that rifting began synchronously in dissimilar portions of the East African Rift.

Influence on Cultural and Sustainable Livelihood Features

As cultivation remains the most important livelihood source, livelihoods are basically interwoven with the environment necessity of human livelihoods on normal resources. This is apparent in the overgrazing, overfishing and overemployment of negligible land, is a main basis of environmental degradation that limits regional and/or international sustainability. The loss of environment facilities also spoils human well - being and requires families and homes to find other livelihoods (Tilumanywa, 2013; Nonnotte et al., 2008; Drakenberg & Fernqvist, 2016) .

Actual natural renovation and viable development initiatives and policies require to reflect on livelihoods of local families and encourage their contribution. The perception of viable livelihoods are associated with socio - economic and environmental concerns so as to achieve eco - friendly environmental sustainability. Dynamic livelihoods are fundamental for achieving sustainable development. The other essential trail concerning sustainable livelihoods for the populations of marginal environments comprises the anticipation of long - term addiction on one income cause. Implementing of justifiable land management practices, encourage afforestation programs, and address environmental factors subsidizing to landslides and other natural disasters (Drakenberg & Fernqvist, 2016) .

Poverty Allegation for environmental Problems

Poverty - environmental association are expressed through the weakness among poor people in relation to climate change and variability, as they lack the resources essential to alleviate and improve from climate induced shocks and stresses such as floods, storms and drought. As agriculture is the dominating source of income access to arable land is crucial, as well as land for grazing, forests to fetch fuel wood and hunt in and so on. Access to water is perhaps the most important of the poverty - environmental linkages. Change in rainfall patterns or increased temperature and through that decreased availability of water, would severely affect all natural resource based sectors and increase the likelihood of further

environmental degradation. It is evident that all aspects of climate change have the potential to decrease security and increase vulnerability (Drakenberg & Fernqvist, 2016;

Tilumanywa, 2013; Nonnotte et al., 2008; Delcamp et al., 2016).



Figure 2: Area where houses were placed before Mudslide

Source: Daily news <https://dailynews.co.tz/reveled-reason-behind-hanang-disaster/>

Loud bang, something like an earthquake was heard, followed by cries from fellow community members. The influence of the mudslides was so shocking that various properties, including houses and business areas, were destroyed. Cars, motorcycles, and other belongings were swept away.

The mudslide's instant influence was the sad loss of lives of more than 85 people and 77 were injured in Gendabi village, where the mountain discharged debris and houses in the village have been swept away by the mudslide. There are neither trees nor people in Gendashi village and all areas around Katesh who left behind without being affected by Mudslide (Daily news, December, 9, 2023).

There could be perhaps many people stuck in mud especially in Gendabi village which is located on the Mountain's foothills. (Daily news, December, 5, 2023). Top leaders urged people living in flood-prone areas to transfer to higher ground as they expected heavy rains and flash floods continued to cause chaos in the area.

This huge loss exhausted families and communities, leaving a void that will never be truly occupied.

Furthermore, the 117 individuals who suffered constant injuries tackled physical and emotional trauma, requiring urgent medical attention and support (Daily news, December, 3, 2023).

Climate Transformation Variation and Justification

Livelihood change (LC), which is defined as the process by which rural families construct a change portfolio of deeds and social support capabilities so as to survive and to progress in their standards of living, has involved prevalent attention from scholars and policymakers in developing countries. Higgins & Caretta, (2022); Dai et al., (2019); Munishi, P. K. T. Ngaga & Faculty, (2008), conducted Studies concerning land slide (LD) that is helpful for dismissing compression on the atmosphere, falling livelihood jeopardies and exposures improving livelihood flexibility and sustainability and improving poverty. Discovering the characteristics and causes of LD are critical concerns in environmentally fragile areas to inform upcoming suitable policies and involvements for livelihood improvement, ecological preservation and regional maintainable progress.



Figure 1: Mudslide around Hanang Mountain

Source: Daily news <https://dailynews.co.tz/reveled-reason-behind-hanang-disaster/>

Methodology

Due to economic and time limits, ethnographic fieldwork was not carried out, instead an analysis of secondary data in the form of newspaper articles, international and local organizations reports, and a few existing scholarly papers were used to gather information on past and current socio-ecological developments.

4. Conclusion and Recommendation

The major livelihoods with regard to water use are various types of domestic use and irrigated agriculture especially during the dry season.

The disaster underscored the vulnerability not only on HM but also on Tanzania's mountainous regions to landslides and or mudslide, predominantly areas with soft rock materializations and sharp slopes. This vulnerability highlights the need for full risk assessments and active events to avoid upcoming disasters.

It is recommended that people's behavior should be changed to follow the directive procedures from the government for their benefit of their lives and their fellows. Training and education opportunity to local communities can be a powerful incentive to protection and management of water resources.

Clear policies on land around water banks and priority activities on the HM are important in order to avoid soil erosion and landslide that can affect people around the mountain.

The government should employ procedures to improve the resilience of arrangement against future disasters.

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