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LOCAL PERCEPTION OF LANDSLIDE PROBLEMS IN MANJIYA COUNTY, MBALE DISTRICT, EASTERN UGANDA

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Abstract

Landslides are a problem in Manjiya County. They have led to loss of life, property, crops and farmlands. The causes of landslides in this area are not scientifically known however the information from the local population indicates that the main causes of landslides are rainfall, steep slopes, soil properties and to some extent over cultivation of the soils which reduces the soil strength. This paper assesses the causes and impacts of landslides as perceived by the local population. This can form a basis for further scientific investigations.

Key words: landslides, Manjiya, indigenous perception,

1. Background to the landslides

Landslides are a downward movement of rock materials and soils by gravity (Cruden 1991). The rock and soil materials fall, slide, flow or move by a combination of these methods. Landslides are a serious hazard in Uganda's mountains and highland areas with great socio-economic, physical and environmental impacts and yet they are poorly studied (Ngecu and Mathu 1999). Landslides are a problem to people in Manjiya County (Figure 1). In 1997 and 1998, 48 people were killed, several houses destroyed, crops and farmlands washed away and infrastructure such as roads damaged. Several people in the highlands and steep mountain slopes have been forced to settle elsewhere. The majority of people in Manjiya depend on agriculture for livelihood. Loss of soils and farmlands therefore leaves them highly improverished. Landslides have degraded farmlands and the environment in Manjiya County. It is hypothesized in this paper that the manner in which local people perceive the problem of land slides partly influences how they can respond to it. Information on the impacts of landslides is needed to aid decision making and planning of strategies to overcome the problem.

2. The study area

2.1 Location and size

Manjiya County is found between 2^0 49' N - 2^0 55' N and 34^0 15' E - 34^0 34' E. It covers an area of about 25,172 hectares on the steep slopes of the domed basements rocks surrounding the

Butiriku carbonatite in Eastern Uganda. Out of these, 13,056.8 hectares (51.9%) belong to the Mount Elgon National Park leaving 12,115.2 hectares (48.1%) for cultivation and settlements.

2.2 Topography and drainage

The area is densely dissected by rivers and streams from the Mount Elgon Volcano leading to a rugged topography characterized by steep slopes. More than 80% of the land in Manjiya County consists of slopes above 15^0.

Figure 1 A slope affected by a rotational slump in Bududa Sub county in 1997.
The landslide destroyed 97 houses and displaced about 330,000 m^3 of soil.

2.3 Geology

The main lithology in Manjiya are the fenitized basement rocks which are the oldest and of Archean age. Observation in the filed shows that landslides are common in this zone. The Butiriku carbonatite which is of tertiary age and covers Bukigai Subcounty has no landslides. The Mount Elgon agglomerates and tuffs which are in the north east of the County are under the National Park and suffer from rock falls.

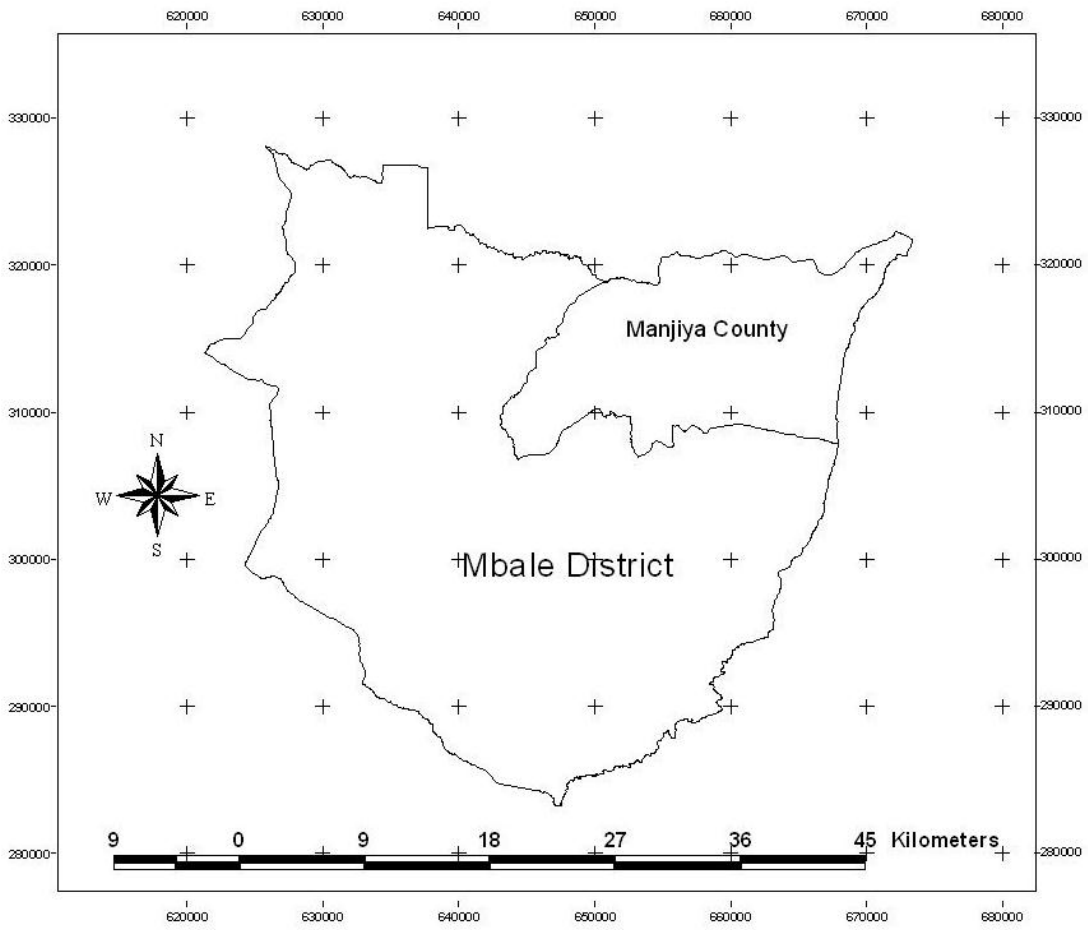

Figure 2: Location of Manjiya County in Uganda

2.4 Soils

According to Ollier (1959), the soils of Manjiya consist of the Bududa series which are red clay loams originating from the Elgon volcanics and basement rocks. The soils are Nitisols as given in the FAO soil classification, 1998 (World Resource Base). Another soil series is the Bubutu series which consist of non – lateritised brown sandy clay loams originating from the basement complex granites which are Ferrasols according to the WRB 1998 classification. The Butiriku carbonatite gave rise to red-brown soils with very thin A horizon and a thick B horizon (Reedman, 1974). The soils have excess alumina over the alkalis due to the highly weathered stage and kaolinisation (Reedman, 1974). Records from NEMA and NARO reveal that the soils of Manjiya consist of Rhodi Andic Nitisols in the areas covered by the carbonatite, the Rhodic Andic Luvisols which surround the Nitisols and the outer ring consists of Ferrasols.

2.5 Landuse in Manjiya County

According to local oral accounts, Manjiya County was originally covered with thick forests roamed by wild animals. The Barwa from Kenya were the first settlers who arrived in 1700. The Banyole arrived in the mid 1750s and settled in Tororo District. These are believed to be the

forefathers of the Manjiya people and they survived by hunting and cultivation. As the population increased the forests were cleared and turned into farmlands and bananas and beans were grown. Coffee was introduced in the 1930s as a cash crop. It is believed that deforestation of the steep slopes intensified in the 1960's. Currently land is scarce due to high population density and crop rotation is not practiced. Indigenous forests no longer exist except a few eucalyptus woodlots planted by farmers to supply building poles and firewood.

3. Landslide occurrence and impacts

According to the local people, there are direct and indirect impacts of landslides in Manjiya County. The direct impacts are loss of lives, damage to infrastructure, destruction of agricultural crops and farmland and loss of household property. The indirect impacts include landuse conflicts, food scarcity, increased costs of road repairs, living in fear and displacement of people. Between 1997 and 1999 about 10,000 people were displaced from slopes and 48 killed by landslides. 154 people have been killed since 1960 and the number appears to increase over the years (Table 1). The high population pressure and land scarcity has forced people to settle on and cultivate steep slopes that are landslide prone.

4. Causes of landslides from indigenous perceptions

The causes and impacts of landslides in the Manjiya County has not been studied adequately. Local people believe that landslides occur mainly in the wet seasons and are triggered by frequent cultivation of the same piece of land, prolonged heavy rains, highly permeable soils and steep slopes (Table 2). Furthermore, they feel that land fragmentation (which hinders soil conservation), high population density, removal of tree cover and shallow terraces accelerates soil erosion and increases the risks of landslides. It was found that local people could predict the occurrence of landslide and identify areas with landslide risk using indicators such as concave slopes that trap rainwater, low tree cover and stony soils.

Conclusions

1. Landslides in Manjiya County have caused loss of lives and property.
2. Local people can predict landslide occurrence and identify landslide risk areas. Such knowledge can help to provide solutions to the problem of landslides.
3. Limited research and documentation of landslides has hindered the development of strategies to address the problem of landslides.

Table 1 Landslides incidences in Manjiya County based on local accounts.

Year	Sub-Counties affected	Causes of landslide	Losses
1818	Bududa, Bulucheke	Rockslide triggered by rainfall in weathered granite in Bulucheke.	Not known
1900	Bududa,	A landslide that incised the Konokoyi valley. Triggered by heavy rainfall.	Not known
1918	Bududa (Busayi).	A slump	No death.
1922	Bulucheke (Bumwalukana).	Landslides caused by river undercutting by Sakusaku river.	Killed about 20 farmers who were celebrating the end of the harvest season.
1927	Bulucheke (Busiliwa)	Landslide caused by heavy rains	One man killed and his home and farms swept down slope.
1933	Bulucheke, Bubita	Rock slides at Buwali	Not known
1942	Bulucheke	Landslides triggered by rainfall	Killed very many wild animals such as monkeys, snakes and baboons. A lot of debris was poured blocking roads.
1944	Bulucheke	Landslides triggered by rainfall	None
1960	Bulucheke	Triggered by heavy rains	destroyed coffee farms
1967	Bududa, Bulucheke	Landslide dammed river Sakusaku for three days forming a lake of 2km in length.	When the dam broke Destroyed rice fields and killed people in Bunyole, Tororo District about 20km downstream.
1970	Bulucheke (Nusu)	Landslide triggered by rainfall.	Over 60 circumcision dancers buried alive. Houses were also destroyed.
1997	Bududa, Bulucheke, Bubita, Bushika,	Triggered by heavy rains	About 48 people killed; houses and bridges destroyed
			At Buwali valley water was dammed for one day and destroyed many houses downstream. A family of 6 was killed and bodies have never been recovered.
			Roads were blocked with debris for about one week.
1999	Bududa, Bulucheke, Bubita, Bushika,	Triggered by rainfall	About 5 people killed and houses destroyed.

Table 2 Number of people killed by landslides between 1800 and 2000 in Manjiya County.

Period	Number of deaths
1800-1900	0
1900-1950	21
1950-2000	113

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