Drought and Flood Risk, Impacts and Adaptation Options for Resilience in Rural Communities of Uganda

Shuaib Lwasa, Department of Geography, Makerere University, Kampala, Uganda

ABSTRACT

Climate change is affecting many rural resource-poor communities unequivocally with differing magnitude, severity and frequency of drought risk from one locale to another especially in Africa. At micro spatial scale of households and villages, climate change risk trends and hazards vary spatially, coupling with social, economic and locational conditions. This paper analyzes vulnerability and impacts of climate change from droughts and floods in a rural community with varied geographies across social, economic and environmental profiles in Uganda. In recent years, studies have shown that droughts have increased form 1 in 10 years to 1 in 6 years and the worst affected area is the semi-arid zone of Uganda that spans from south western through central parts to the north-eastern parts of the country. In the study area of Pallisa, located in the eastern central part of the semi-arid zone, droughts and floods impacts on livelihoods, people and assets are eroding the asset-base for the households. Yet the household assets are important in adaptation and resilience of the community. As a natural resource dependent community like many others, evidence strongly suggests increasing climate risks of droughts and floods the impacts of which are worsening the already grim conditions of community well-being. This paper analyses the climate risks utilizing the vulnerability assessment framework. A scenario-based analysis that integrates community evaluation of vulnerability with climate data to analyze current and future vulnerabilities in a spatial context is conducted to examine spatial differences in vulnerability. Various multi-scale adaptation strategies are analyzed in respect to the climate change risks to assess the resilient capacity of the community to current and future vulnerabilities.

KEYWORDS

Agricultural Productivity, Climate Risks, Community-Based Adaptation, Drought, Floods, Livelihoods

INTRODUCTION

Drought has increasingly posed threats to livelihoods due to increasing frequency, intensity and severity in the semi-arid areas of Uganda (Tumwesigye & Musiitwa, 2004). Drought risk has forced communities to adjust agricultural patterns and livelihoods. The increasing impacts, varied magnitudes and uncertainties about risk have attracted attention from researchers but also development practitioners. Drought in the semi-arid zone of Uganda have been observed as increased from 1 in 10 years to 1 in 6 years period (Awange, Aluoch, Ogallo, Omulo, & Omondi, 2007). As a result, the

frequent droughts create little room for bouncing back by communities as they tend to be followed by floods due to excessive rainfall. There is increased investment into community-based adaptation due to anticipated outcomes of investing in specific areas and sectors that are affected by disasters. In Uganda, there is reported community-based adaptation as a direct response to impacts on livelihood of drought risks, which occasionally is followed by floods (Wakhungu, 2005). The investment in community-based adaptation is a means for validation of existing knowledge in understanding of how best to respond to the impacts of climate change (Aalsta, Cannon, & Burton, 2008). Like many other communities that are dependent on natural resource, the adaptation capacity is challenged when the natural resources that form the basis of livelihoods dwindle, especially in areas where fewer opportunities for diversifying livelihood systems exist (Below, Schmid, & Sieber, 2015). In the Ugandan semi-arid zone that stretches from southern to northeastern parts of the country, exposure to climatic risks combines with high levels of poverty to exacerbate vulnerabilities (MoFPED, 2014). Pallisa district is one of the poorest and highly vulnerable to drought risk. Studies show that this area has experienced high frequency of droughts in the last 20 years (Hepworth & Goulden, 2008; McSweeney, Lizcano, New, & Lu, 2010) . The study area is also experiencing a high temporal variation in water and pastures coupled with livestock overgrazing. This paper analyses the observed climate change data in conjunction with community perception of climate change to assesses vulnerability of the community to the multiple climate change stressors of droughts, extended dry-spells, and occasional floods. The major objectives of this paper include; a) to assess the vulnerability of the community in one of the Sub Counties of Pallisa to the impacts of climate change, and b) to identify adaptation mechanisms required for enhanced community resilience to the impacts of climate change. The paper utilizes a scenario-based vulnerability assessment framework to analyzes the current and future vulnerabilities to understand requirements for resilience building. The paper examines some of the learned practices of adaptation that community members have implemented through participatory action and learning.

METHODS AND MATERIALS

Study Area

Pallisa is one of the poorest districts in eastern Uganda located in the plains of the Lake Kioga system. The sub county is one of the poverty hotspots in the country and region with an index of 63%(MoFPED, 2014). Gogonyo Subcounty is particularly located to the west of the district and adjacent to the extensive wetland of Mpologoma River with numerous lakes that form part of the Kioga system. The area is in a natural sink with lakes, large ponds and permanent wetlands the nearest and biggest being Nakuwa that is also a Ramsar Site (Kalanzi, 2015). The geography is characterized by extensive wetlands and lakes with low-lying grasslands with soil types that are medium to low productivity. The subcounty is also located in the cattle corridor, which is a dry land ecosystem stretching from southern Uganda to northeastern parts of the country. The Subcounty has a total land area of 143.7 sq km, with a population of 34,800 according to the 2012 results (MoFPED, 2014). The subcounty has a high population density relative to neighboring subcounties of 346 persons per sq km. The study area is characterized by a mixture of two major tribes of Itesots and Bagwere in four administrative parishes of Gogonyo, Ajepet, Kachango and Angodi. The mix of tribes is important because of the cultural mix, differing agricultural livelihood strategies and adaptations. The major livelihood activities include rain-fed agriculture of perennials including cassava, grazing and annuals including sweet potatoes, cotton and rice. Fishing for some of community members close to the lakes and wetlands is a major livelihood strategy providing employment to youth and women involved in the transportation and trade. The area has less than 5% of non-agricultural waged jobs, a monthly household expenditure of $20 equivalent in 2013 and very few non-agricultural firms operating in the area (MoFPED, 2014).

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