

Mapping and Managing Livelihoods Vulnerability to Drought: A Case Study of Chivi District in Zimbabwe

Raymond Mugandani, Tavagwisa Muziri, Cyril Tapiwa Farai Murewi, Amanda Mugadza, Tavengwa Chitata, Marvelous Sungirai, Farai Solomon Zirebwa, Petronella Manhondo, Elvis Tawanda Mupfiga, Charles Nyamutowa, Bester Tawona Mudereri, Zvenyika Eckson Mugari, Liboster Mwadzingeni and Paramu Mafongoya

Abstract:

The assessment of the vulnerability to drought hazards in smallholder farming systems dependent on rain-fed agriculture has recently gained global popularity, given the need to identify and prioritize climate hotspots for climate adaptation. Over the past decade, numerous studies have focused on vulnerability assessments with respect to drought and other meteorological hazards. Nonetheless, less research has focused on applying common measurement frameworks to compare vulnerability in different communities and the sources of such vulnerability. Yet, the crucial question remains: who is more vulnerable and what contributes to this vulnerability? This article is a case study for assessing the vulnerability to drought of smallholder farmers in two wards in Chivi district, Masvingo Province, Zimbabwe. This study is timely, as climate change is increasingly affecting populations dependent on rainfed agriculture. This assessment has been conducted by calculating the Livelihood Vulnerability Index (LVI) and Livelihood Vulnerability Index of the Intergovernmental Panel on Climate Change (LVI-IPCC). This empirical study used data from 258 households from the two wards and triangulated it through Key Informant Interviews and Focus Group Discussions. To calculate the LVI, twenty-six subcomponents made up of seven major components, including socio-demographic variables; livelihood strategies; social capital; access to food, health, and water; and exposure to drought, were considered. To calculate the LVI-IPCC, we combined the three contributing factors of vulnerability (exposure, sensitivity, and adaptive capacity). Our results indicate that the LVI forward 14 is statistically higher than for ward 19 ($F = 21.960$; $p \leq 0.01$) due to high exposure to drought, food insecurity, and compromised social networks. Concerning the LVI-IPCC, ward 14 was significantly more vulnerable to the impacts of drought than ward 19 ($F = 7.718$; $p \leq 0.01$). Thus, reducing exposure to drought through early warning systems, building diversified agricultural systems, and social networks are of high priority to reduce the vulnerability of the farmers.

Keywords: drought hazard; livelihood vulnerability index (LVI); livelihood vulnerability index—intergovernmental panel on climate change (LVI-IPCC); Chivi district