FANRPAN POLICY BRIEF

Factors Affecting Household Vulnerability to Climate Change in the Lowveld of Swaziland.

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Climate change and livelihood

According to literature in Africa by 2020, between 75 and 250 million people will be exposed to increased water stress due to climate change. In some countries yields from rain-fed agriculture could be reduced by up to 50%. Agricultural production including access to food in many African countries will be severely compromised and this would further adversely affect food security and exacerbate malnutrition. Under climate change much agricultural land will be lost, with shorter growing seasons and lower yields. Future climate variability and change will also interact with other stresses and vulnerabilities such as HIV/AIDS resulting in increased susceptibility and risk to infectious diseases such as cholera and diarrhoea and malnutrition for adults and children.

Over the years Swaziland, has suffered from many climate change impacts such as droughts, change in rainfall patterns and increasing temperatures. For instance, in 1984, there was Cyclone Domonia which affected more than 400 000 people (40% of the population) and caused damage worth US $54 million. Houses and fields were flooded and washed away and a number of people drowned. Infrastructure such as roads, electricity and telephone lines were damaged. In January 2000, the country was severely affected by torrential rains that led to flooding with an estimated 21% of the population affected.

Factors affecting vulnerability of households to climate change households

Vulnerability can be defined as the inability to withstand the adverse impact of exposure to stresses or shocks associated with environmental and social change, and the absence of the capacity to adapt to the impact. Many factors contribute to vulnerability, and these factors act to undermine capacity for self-protection, blocks or diminish access to social protection, delays or complicate recovery or expose some groups to greater or more frequent hazards than other groups. The factors that contribute to vulnerability include rapid population growth, poverty and hunger, poor health, low levels of education, gender inequality, fragile and hazardous location, and lack of access to resources and services, including knowledge and technological means and disintegration of social patterns (social vulnerability).

Household Vulnerability Index (HVI)

Household Vulnerability Index (HVI) is a statistical tool for measuring household vulnerability. This tool was developed by FANRPAN between 2004 and 2007 using statistical research methods on data from seven countries: Swaziland, South Africa, Botswana, Lesotho, Namibia, Zimbabwe and Zambia. The HVI measures the vulnerability of households and communities in relation to the impact of diseases and shocks such as HIV/AIDS, erratic weather patterns and poverty. The tool achieves this by assessing a household's access to five livelihood capitals namely: natural assets such as land, soil and water; physical assets such as livestock and equipment; financial assets such as savings, salaries, remittances or pensions; human capital assets such as farm labour, gender composition and dependents; and social assets such as information, community support, extended families and formal or informal social welfare support.

This study was based on 350 households that were random sampled from a population of 3212 households at Mpholonjeni in the lowveld of Swaziland. Primary data on vulnerability status of households, household access to five livelihood capitals and climate change patterns were collected through personal interviews. The HVI for each household was calculated using the tool developed by FANRPAN. The households were classified into three categories: lowly vulnerable, which are households that are in a vulnerable situation, but can still cope; moderately vulnerable households, which are those that need urgent but temporary assistance in case of a shock and the highly vulnerable households, which are those that are almost in a point of no return. About 40% of the household were lowly vulnerable, 58.2% were moderately vulnerable and 2.2% were highly vulnerable (Table 1).

Table 1: Household vulnerability status of the households

Vulnerability category	HVI value range	Situation of household	% of households
Lowly Vulnerable	0-47	Coping household-household in a vulnerable situation but still able to cope.	39.6
Moderately Vulnerable	47.1-63.7	When hit hard by a shock, the household needs urgent but temporary external assistance for it to recover.	58.2
Highly Vulnerable	63.71-100	Emergency level household- the equivalent of an intensive care situation-could be resuscitated only with the best possible expertise.	2.2
Total			100

Variables affecting the vulnerability of households

The multinomial logical regression model was used to determine the factors affecting vulnerability of households. The variables that were found to affect vulnerability of households to climate change were livestock ownership, number of household members that had formal employment, number of sick members within a household and household size. Households with livestock were more resilient to climate change, and a unit increase in livestock ownership the decrease the probability of a household shifting from low vulnerability to moderate vulnerability category. Households with livestock would sell them in the event of financial shock and food shortage, thereby reducing the vulnerability. Households with members with formal employment were also more resilient to climate change. Members of households with formal employment would remit funds to the households in times of need. Households with large active members were less likely to shift from low vulnerability to high vulnerability. This was because the active household members would provide labour for agricultural and household activities. The variables that increased vulnerability to climate change were number of sick members of household and number of dependents (Table 2). A household with a sick member was four times more likely to shift from low vulnerability to high vulnerability category. This was because the household would channel financial resources to seeing to it that the sick member was taken care off. They would also have less time to do household, agricultural and income generating activities. Education level of household head did not have a significant effect on vulnerability to climate change.

Table 2: Variables affecting vulnerability of households

Variable	Effect
Livestock ownership	A unit increase in livestock numbers decreases the probability of a household shifting from low vulnerability category to moderate category by 15%
Number of household members with formal employment	A unit increase in the number of employed members would decrease the probability of a household shifting from low vulnerability category to moderate category by 30%
Number of sick members of household	A unit increase in the number of sick members would increase the probability of a household shifting from low vulnerability to high vulnerability by 440%
Number of dependents within a household	A unit increase in the number of dependents would increase the probability of a household shifting from low vulnerability to high vulnerability category by11%
Education level of the head of household	The education level of the head of household was not significant for a household to shift from low vulnerability to either moderate vulnerability or high vulnerability
Household size	A unit increase in household size would decrease the probability of a household shifting from low vulnerability to high vulnerability by 99%.

Implication of study and recommendations

The findings of study demonstrate that households have different levels of vulnerability to climate change. Some households are highly vulnerable, some are moderately vulnerable, and others are highly vulnerable. In the case of Mpholonjeni that was used as a case study area, only 2.2% of the households were highly vulnerable. About 58% of the households were moderately vulnerable and about 40% were lowly vulnerable. The households that were highly vulnerable would need emergency assistance on food at all times. On the other hand the households that were moderately vulnerable would need urgent but temporary external assistance for it to recover when hit hard by shock. Drought is the common shock in the lowveld of Swaziland. Temporary external assistance would include food rations after failure of crop, and provision of seed and fertilizer at the beginning of the next growing season. The proportion of households at the different household vulnerability categories will differ for communities.

Based on the study the following recommendations are made:

1. HVI is a tool that can be used to identify households that need interventions and the types of interventions in the event of external shocks such as those brought about by climate variability and climate change. The HVI should be determined for each community, and should not be generalised.
2. Households that are highly vulnerable to external shocks such as drought and crop failure should be assisted by provision of food rations and financial resources to meet urgent needs. Such households could be resuscitated only with the best possible expertise, and it would take some time to do so.
3. Attention should be given to household who fall under the moderately vulnerable category in making sure that they do not shift to the highly vulnerable category. This could be done by providing them with temporary assistance such as seeds and fertilizer
4. Households with sick members should be afforded external assistance, as they are more likely to shift from low vulnerability to highly vulnerability. The prevalence of HIV/Aids in the country is having a significant impact in increasing vulnerability of households to external shocks.

Further reading

Abate, F.S. (2009). Climate Change Impact on Livelihood, Vulnerability and Coping Mechanisms in West-Arsi Zone, Ethiopia.

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Sibanda, L.M. Kureya, T. & Chipfupa, U. (2008). The Household Vulnerability Index Framework. Pretoria. South Africa.