

POLICY BRIEF



PREDICTORS OF FOOD INSECURITY IN SWAZILAND: LESSONS FROM THE 2015/16 EL NIÑO INDUCED DROUGHT

Key Message

The National Food Security Policy (NFSP) 2005 stresses recurrent droughts and the high incidence of HIV/AIDS in Swaziland as the major contributing factors towards adverse food insecurity in the country. Consistently, when droughts hit the country, food production plummets and pushes a significant portion of the population into food insecurity. An investigation of the predictors of food insecurity among households during the 2015/16 drought provides information on the households that are prone to drought induced food insecurity, so as to inform food security risk mapping in the country. The assessment found that the most significant factors associated with increased food insecurity odds at the household level include households in the Lubombo region which is the poorest among the four regions. Households that do not have toilet facilities in their homesteads, those that depend on rainwater and boreholes as their main source of drinking water, as well as households that use lanterns or oil lamps as their main source of lighting are more likely to be food insecure. Another important factor that can be a good predictor of increased food insecurity during a drought is the ownership and use of tractors and hoes within households that depend on crop production as one of the main sources of food.

The study also finds that the price of maize and rice is a good predictor of food insecurity among households, given that maize is a staple food in Swaziland. Finally, health decline and disabilities were correlated with high incidence of food insecurity in a household. If the price becomes too high due to food inflation during a drought, many rural households become significantly vulnerable to food insecurity. A major finding that cuts across all households in the country is that all monthly incomes above E1,000 significantly reduce the likelihood of food insecurity, with a monthly income of E3,500 being the optimal level of income for a household to shirk against extreme levels of food insecurity.

What is the issue?

Droughts are a constant threat to food security in Swaziland. The Swaziland Vulnerability Assessment Committee Report (VAC) (July, 2016) found that more than half of the population became food insecure as a result of the 2015/16 El Niño induced drought. During this drought, the food insecure population increased by 99% from 320,973 people in July 2015 to 638,251 people in May 2016. In another drought in 2007, the Office for the Coordination of Humanitarian Affairs (OCHA) reported that approximately 41% of the population in Swaziland (410,000 to 610,000 people) required food assistance through the

regular programmes of the Swazi Government and World Food Programme (WFP). In 1992 (Swaziland's other major drought within the past two decades), 410,000 people or 48% of Swaziland's population required food relief (Herrick and Greene, 1994). On the other hand, the Intergovernmental Panel on Climate Change (IPCC) cautions that droughts will occur more frequently, hence, agriculture-based livelihood systems, such as in Swaziland, that are already vulnerable to food insecurity face immediate risk (IPCC, 2007). The implication for Swaziland is that yields from rain-fed agriculture could fall by up to 50% by 2020 (IPCC, 2007).

Maize remains the important staple food crop grown on Swazi Nation Land for subsistence purposes and food security. It is also the measure of food security in the country (FAO, 2005). However, though a substantial number of rural households produce it, the country has never produced enough maize for total domestic consumption (Magagula, Dlamini, Mkhwanazi, 2007). Statistics on maize production reveal that the country has in the past 40 years never met its population maize requirement. In good years, Swaziland only produces enough to meet about 45% (110,250 tonnes) of its annual total cereal requirements of 245,000 tonnes. During the 2015/16 drought, maize production dropped by 67%, forcing the country to import about 30,446 tonnes of maize from South Africa. It points to the argument that Swaziland as a country is extremely food insecure and since the early 1990s, has shifted from being a net exporter of food to depending on food aid to feed its population (Tevera et al, 2012).

Why does it matter??

The country's National Development Strategy (NDS) and Poverty Reduction Strategy and Action Plan (PRSAP) recognise that the country has a large rural population that suffers from inadequate access to food and high unemployment. The NDS expects the agriculture sector to implement strategies for food security enhancement, drought mitigation, poverty alleviation, and sustainable use of the Kingdom's natural resources. The NFSP (2005) forms the basis for priority setting and strategy development around food security. The NFSP emphasises the fact that recurring droughts and the high incidence of HIV/AIDS in Swaziland are the major contributing factors towards adverse food insecurity. Currently, a large proportion of the country's population faces impacts of chronic drought conditions and impacts of HIV/AIDS, leading to substantial declines in agricultural productivity.

An evaluation of the geographic and socioeconomic factors that predict the likelihood of food insecurity among households in Swaziland is important to generate policy information on where to target agricultural investments and drought mitigation programmes in the country, focusing on the most vulnerable households. Specifically, lessons from the 2015/16 El Niño induced drought matter for food security risk mapping to inform policy on targeted and optimal drought mitigation programming within households, communities, and regions in the country.

Given the IPCC projections on extreme weather conditions going into the future, and given the general state of food production deficiency in Swaziland, investments in climate change adaptation and mitigation are much needed to shield the agriculture sector and associated livelihoods from future cataclysmic drought episodes. The food insecurity results of the 2015/16 drought provide information on priority geographic areas and the socioeconomic

conditions that need changing for effective drought disaster mitigation programming to prevent similar future droughts from becoming disasters.

How was the study conducted?

In order to determine the predictors of food insecurity during drought at the household level, the study used data obtained from the NDMA/SEPARC Study on the Socio-Economic Impacts of the 2015/16 EL Niño Induced Drought in Swaziland, conducted in November/December 2016. The socioeconomic impact survey used a sample of 2,958 households clustered in 298 enumeration areas across the 55 constituencies (Tinkhundla) in Swaziland. The survey solicited responses from household breadwinners or adults (18 years or older) who are decision makers in their households.

The survey questionnaire examined household demographics; asset ownership and risk to poverty; main sources of drinking water; main sources of income; household participation in agriculture; drought impacts and coping mechanisms; drought impact significance; household networks/social participation; drought mitigation measures; and drought response behaviour. An important variable used to assess food insecurity among the households was a binary response question which asked all households whether during the 6 to 12 months of the drought they faced a shortage of food or money to buy food. The response from each household was either a YES (coded: 1) the household faced a shortage of food or money to buy food, or a NO (coded: 0) the household did not face a shortage of food or money to buy food.

With this information, the study performed a logistic regression to determine the geographic and socioeconomic factors that significantly predict food insecurity within a household in Swaziland. The logistic regression model gives an odds ratio which is the probability that a household would be food insecure or food secure given a particular socioeconomic or geographic factor.

What did the study find?

Generally, Lubombo reported the most number of food insecure households at 72.9%, Shiselweni followed with 58.1% while the Manzini and Hhohho regions trailed behind at 56.4% and 50.1% respectively. The proportion of food insecure households were greater than the proportion of food secure households in all four regions. This implies that droughts are a serious threat to food security in all four regions in Swaziland and without the necessary drought mitigation strategies, the country will perpetually face a food humanitarian crisis when similar droughts hit in the near future. Geographically, the odds of being food insecure are 1.67 times greater in the Lubombo region when compared to the Hhohho region. Manzini region has a food insecurity odds ratio 1.3 times greater than the Hhohho region.

Constituencies that experienced the most severe impacts on overall food insecurity due to the 2015/16 drought include Lomahasha (94.6%), Mthongwaneni (92.6%), Matsanjeni North (92.6%), Ngudzeni (89%), Sigwe (87.2%), Hlane (87%), Madlangempisi (86.8%), Sandleni (86%), Mkhiweni (85.8%), Sithobela (85.2%), Ntontozi (83.8%), Lubuli (83.6%), Dvokodvweni (83.4%), Mayiwane (82.2%), Siphofaneni (82%), Mafutseni (81.8%), Ndzingeni (81.6%), Mhlangatane (81.4%), Matsanjeni South (81.2%), Mahlangatja (80.4%), and Nkwene (80%).

On the other hand, constituencies that experienced the least impacts on food insecurity were fewer in numbers and these included Mbabane East (42%), Mbangweni (49.2%), Mahlanya (51.4%), Pigg's Peak (51.6%), Mbabane West (54.4%), Lavumisa (55%), LaMgabhi (56.4%), Hhukwini (58.4%), and Lobamba (60%).

On the specific socioeconomic factors that predict the probability of food insecurity among households in Swaziland, the study found that households that depend on rainwater collection as their main source of drinking water are 3.2 times more likely to be food insecure than those who rely on the country's water utility company, Swaziland Water Services Corporation (SWSC). Similarly, households that depend on boreholes are almost 2 times (1.7 times) more likely to be food insecure than those who depend on SWSC as their main source of drinking water. Toilet facilities are also a good predictor of food insecurity within a household. Households that rely on neighbours, and public toilet facilities compared to households that have septic sewer systems in their homes are 3.4 times more likely to be food insecure.

Sources of energy also proved to be good predictors of food insecurity within households in Swaziland. Households that depend on oil lamps/lanterns for lighting are 1.8 times more likely to be food insecure than households that use electricity as their main lighting source. In contrast, the few households in the country that have installed solar panels for electricity to light their homes are less likely to be food insecure compared to those that use the conventional grid electricity.

An analysis of the typical household assets revealed that cars (0.655), ploughs (0.509), water pumps (0.319), water tanks (0.791) are significant predictors of food security at the household level. Households that own these assets are less likely to be food insecure by the odd ratio indicated in parenthesis compared to households that do not own these assets. These agricultural production and water harvesting and storage equipment are expensive to buy. Households that own tractors (2.069) and hoes (1.378) are more likely to be food insecure. Similarly, the logistic model reveals that the odds of a household that depends on crop farming for food is 1.557 times greater to be food insecure than the odds of a household that does not depend on crop farming to sustain its livelihood. The reason subsistence agriculture remains vulnerable to drought is because it is dependent on direct rainfall. When the rains vanish as they did in the 2015/16 El Niño induced drought, households are unable to produce crops for food.

A closer look on household food budgets the model showed that households that spend more on mealie-meal and rice as a proportion of their total income are likely to be food insecure than those household that spend less on these items as a share of their total income. Maize is a staple food in Swaziland, therefore an increase in the price of maize increases the odds of a household that depends on maize a key food source being food insecure by 1.0017. Rice is increasingly becoming a staple food in Swaziland, as increases in the price of rice affects a significant number of households in the country. However, on the other hand, high spenders on vegetables, meat, and fish are less likely to be food insecure. Households that pay a premium on these food items (assuming premium quality of vegetables, meat, and fish) are less likely to be food insecure than those households that spend less of their food budgets on these items.

Now on general household budgets, the ratio of money spent on transportation also predicts the likelihood of food insecurity within a household. The study demonstrated that households

that spend a lot on commuting costs are 1.0007 times more likely to be food insecure than households that spend less of their total incomes on transportation costs. This result suggests that transportation costs are now so important across the country such that increases in bus fares have a huge bearing on the status of food insecurity among households. Wealthier households that do not feel the pinch of spending a significant portion of their total incomes are able to save and as well are less likely to be food insecure. Households that are able to save have odds of being food insecure that are 0.9996 lower than those that do not save.

Comparing the levels of income regardless of source of income, the study revealed that all incomes above E1,000 increase a household's chance of being food secure significantly compared to households that do not have any form of income (zero income). The greatest impact in reducing food insecurity within a household occurs between the E3,001 and E4,001 income band. It suggests that households should earn at least an average of E3,500 monthly to suitably shirk risk against extreme forms of food insecurity. Families whose incomes were not affected by the drought were indeed 0.367 times more food secure than families who saw their incomes slashed by 75% as a result of the 2015/16 drought.

Finally, the logistic model demonstrated that the overall health status of a households plays a significant role in household food security. High/severe health declines and severe impacts on disabilities associated with the drought contribute substantially to food insecurity within a household. Households that experienced high/severe impacts on health and disabilities as a result of the 2015/16 drought were 2.5 to 3 times more likely to be food insecure than household that did not experience deterioration in health or inconveniences from disabilities due to the drought.

Recommendations

Based on the findings, the study proposes the following set of recommendations:

- Deliberately target Lomahasha, Mthongwaneni, Matsanjeni North, Ngudzeni, Sigwe, Hlane, Madlangempisi, Sandleni, Mkhiweni, Sithobela, Ntontozi, Lubuli, Dvokodveni, Mayiwane, Siphofaneni, Mafutseni, Ndzingeni, Mhlangatane, Matsanjeni South, Mahlangatja, and Nkwene in implementing the programmes stipulated in the Food Security Policy (2005).
- Strengthen and expand the implementation of the Poverty Reduction Strategy and Action Plan to other regions through supporting the development of income generating activities among the poorest in Swaziland within these targeted constituencies.
- Focus the implementation of the PRSAP in the Lubombo region especially in investments in agriculture to increase the level of food production in this region.
- Encourage commercialisation and value-addition in rural households to increase national food production and incomes in households paying special attention to the Lubombo and Shiselweni regions.
- Investigate the suitability and sustainability of E3,500 minimum monthly income in Swaziland.

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