

Drought Conditions and Management Strategies in Botswana



Dr. M. Manthe-Tsuaneng
Acting Deputy Permanent Secretary- Natural Resources
Ministry of Environment, Wildlife and Tourism
Private Bag BO 199
Gaborone, Botswana
mmanthe-tsuaneng@gov.bw

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Background:

Botswana lies between the latitudes of 18 to 27 degrees South and the longitudes of 20 to 29 degrees East, in the centre of the Southern Africa Plateau at a mean altitude of 1,000 m above sea level. The country has a total land area of 582,000 square kilometres. The climate of Botswana is dry and semi-arid. The northern part of the country lies within the tropics, but because of the altitude and distance from the oceans, the climate is more temperate than tropical. Rainfall is low, erratic and unevenly distributed ranging from 600 mm in the north to less than 250 mm over the southwest (Figure 1).

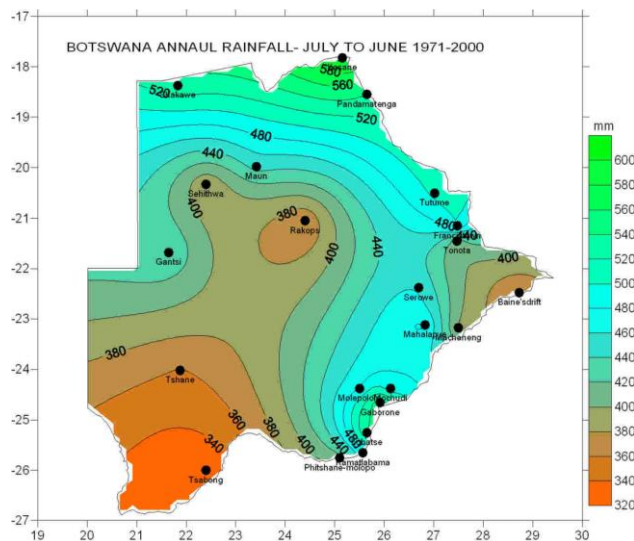


Figure 1: Spatial annual rainfall distribution over Botswana 1971-2000. Source: Department of Meteorological Services, Botswana.

The country experiences several natural hazards, of which drought is very common and recurrent. The worst drought in recent years was from 1981 to 1987 followed by 1990 to 1995. Droughts were also experienced in 1998/99 season, 2002 to 2006 and from 2011 to 2013.

The impacts of drought are wide ranging affecting almost all sectors of development especially agriculture, water and health. Loss of income either due to loss of crops, livestock or employment in these sectors causes great stress on people's livelihoods. For example, Figure 2 shows the decline in national cattle herd size since 2008 mainly due to drought.

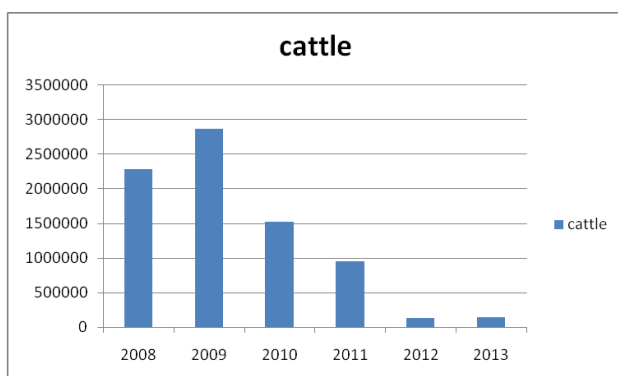


Figure 2: Botswana national cattle herd size from 2008 to 2013. Source: Botswana Vulnerability Assessment Report 2013.

Drought adversely affects the already fragile food and agricultural situation and seriously impairs the rural economy and socio-cultural structures. About 70% of the rural households derive part of their livelihoods from agriculture; and crop production is mainly based on rain-fed farming. Rangeland resources, which cover more than 60% of the country and are the basis for the cattle industry, are the most affected by drought albeit to varying degrees. Urban communities are mostly affected by lack of water as water supply becomes limited to support daily activities including rationing of drinking water. The elderly, the destitute, children under the age of five are some layers of the population that are severely affected by drought. Malnutrition amongst these groups is usually aggravated during times of drought.

Drought Monitoring and Early Warning Systems:

Botswana has an organized drought monitoring system. There is a strong network of stakeholders and organizations dealing with drought monitoring and mitigation that include National Early Warning Technical Committee, Inter-Ministerial Drought Committee and Rural Development Council. Institutions that monitor drought comprise of Ministry of Agriculture; Ministry of Health; Ministry of Local Government and Rural Development; Ministry of Environment, Wildlife and Tourism; and Ministry of Minerals, Energy and Water Resources. The indicators used are rainfall, area ploughed and planted to reflect food security at household level; conditions of rangeland, livestock (Tables 1 and 2), water and wildlife; and malnutrition levels. The above institutions hold early warning monthly meetings to track trends of the indicators.

Table 1: Cumulative Livestock Mortality - 2007

Animal Production Districts	Cattle	Goats	Sheep	Horses	Donkeys
Kgalagadi North	278	98	0	8	10
Kgalagadi North	17	29	0	0	0
Kgatleng	87	0	0	0	0
Letlhakeng	96	48	25	4	8
Maun	150	0	0	16	14
Molepolole	670	151	50	0	115

Nata	81	0	0	0	0
Serowe	12	0	0	0	9
Southern (Kanye)	21	0	0	0	0
Southern (Lobatse)	48	31	2	0	1
Southern (Jwaneng)	16	0	0	1	1
Tutume	8	0	0	0	0
Total	1482	357	77	29	158

IMDC 2008 Report

Table 2: Estimated crop area ploughed/ planted, 2007/2008 crop season (000 ha) communal sector

Agricultural Region	Estimated of Area Planted 2004/05 (000 ha)	Estimated of Area Planted 2005/06 (000 ha)	Estimated of Area Planted 2006/07 (000 ha)	Estimated of Area Planted 2007/08 (000 ha)
Southern	14.797	15.643	2.66526	15.112
Gaborone	5.739	18.445	1.635	15.906
Central	6.7913	28.942	9.7629	22.894
Francistown	8.231	16.349	4.93675	10.963
Maun	0.985	4.508	0.45247	3.167
Western	0.152	0.907	0.285	0.663
Total	36.6953	84.794	19.737	68.705

IMDC 2008 Report

A Drought and Household Food Security Outlook tour is undertaken annually after the rainy season (April-May). This exercise is conducted to complement early-warning reports compiled on a routine basis by the various Government Departments and Ministries. The assessment verifies and reconciles existing information at the national level with district information, and also provides a forum to generate discussions with the districts on issues of drought and drought management. Therefore the objectives of the exercise are twofold:

- (i) Ascertain whether or not it is a drought year. Drought in this context refers to a deficiency in rainfall in terms of its timing, spatial-temporal distribution, and/or overall amounts received and whether they were severe enough to negatively affect plant growth, water supplies, wildlife condition and ultimately human livelihoods and food security in general; and,
- (ii) Determine the need or otherwise for government intervention, including the modification of form, magnitude, and scope of such interventions, particularly taking into account the identified manifestations of the prevailing situation.

Meteorological and Hydrological institutions form part of the Drought Assessment Team and partake in the annual tour. Located at the Botswana Meteorological Services is the Monitoring for Environment and Security in Africa (MESA) programme for southern

Africa which provides a drought service. It is an Earth observation System which relies on the MESA Drought Monitoring Software and can provide a wide range of drought information products including 10-day drought maps and monthly drought risk maps for use by countries in the region.

Vulnerability assessment:

One of the Drought and Household Food Security Outlook tour team's assignment relates to assessing the current levels of human vulnerability and signs of stress and the possible effects of their interaction with the observed impacts of drought. To address this, the nutritional status of the under-five year olds' is reviewed using the information generated by the nutritional surveillance system. The situation with regard to destitution and social welfare issues is also reviewed so as to detect the current and emerging trends in the number and distribution of destitute persons. The extent of wildfires is also reviewed since high fire damages may exacerbate levels of vulnerability if left unchecked.

A review of the implementation of the feeding and intensive labour works (Ipelegeng) programme is also done. Based on conclusions arising from the above, the assessment team determines the need or otherwise for continuation of Government intervention, including the form, nature and scope of the interventions.

Botswana Vulnerability Assessment Committee (BVAC) was formed in 2008 as part of the regional effort to respond to the food security crisis that faced SADC countries at the time. Since then, the BVAC has been undertaking annual livelihood vulnerability assessments with the intention to inform decision making for interventions.

Some of the most vulnerable sectors of the economy during drought years are the agriculture and the water sectors. Rural communities are highly depended on crop and livestock production whilst shortage of water is a major problem in urban areas. Water rationing is the norm during times of drought. The most vulnerable groups of society include small scale farmers, the destitute, women especially in rural areas, children under the age of five and the elderly, pregnant and lactating women, orphans and people affected by HIV/AIDS.

Communities with agro-based livelihoods suffer income losses and asset depletion, especially noting drought related livestock mortality. Drought impact and threaten the nutritional status of the population especially young children, which is anchored on the countrywide feeding programme of the under-fives and vulnerable groups. Poor yield harvests, shortage of seeds, and impaired purchasing power at the household levels are some of the impacts of drought in Botswana.

Emergency relief and drought response:

The National Disaster Management Office (NDMO) under the Office of the President is responsible for coordinating disaster risk management activities in Botswana. Drought

however, is managed under the Ministry of Local Government and Rural Development through the implementation of the 1992 Drought Policy which gives priority to labour intensive public works to provide temporary employment as it aims to link relief and development (Buchanan-Smith and Tlogelang, 1994).

During drought periods all ministries and local authorities are mobilized to assist in relief programmes including public works projects designed to create employment during difficult times. The primary aim of the drought packages is to provide relief to human suffering and prevent loss of life.

The types and forms of emergency provided by government during times of drought include increasing the employment quota for intensive labour works (Ipelegeng), purchase of additional water bowsers to help augment human water supply shortages (emergency water supply), free supplementary feeding of vulnerable groups in schools and direct feeding for all children under the age of five years who attend child welfare clinics and other vulnerable groups.

Provision of drought relief subsidies on selected livestock feeds, vaccines and supplements, cattle purchase schemes and monitoring of food supplies with the view of importing more if the need be are some additional measures undertaken.

Practices to alleviate drought impacts:

In line with major agricultural policy changes in the world economy of the green agenda and the reduction of farm policy programmes, the government in 1992 reviewed the Drought Relief Programme. Past relief measures that contributed to land degradation such as clearance and de-stumping schemes were dropped. Support was given to proposals that gave priority to investments in water conservation, appropriate land use and improved management techniques. The introduction of the National Water Master Plan, National Conservation Strategy and Agricultural Policy contributed implementation of this approach

In order to address the drought situation, in the short term water restrictions and rationing has been introduced. In the medium term, Government has put funds aside for the implementation of drought mitigation projects. These include projects to upgrade and refurbish boreholes, build treatment plants and upgrade water treatment schemes.

To alleviate the impacts of drought related mortalities, farmers are encouraged to sell some of their livestock and to buy animal feed for the remaining. Cattle farmers are also encouraged to link up with arable farmers to use failed crop as fodder for livestock, Also the Livestock Advisory Centres are stocked with feed which is sold to farmers at a subsidised price during drought. Government has put in place measures to provide treated waste water from sewage ponds around the country for irrigation of horticultural crops.

The need for knowledge and skills on drought management:

Although Government has put in place strategies to mitigate the impacts of drought, there is need to create awareness among the citizenry on the cyclic nature of drought as years of

good rainfall are usually followed by those of drought conditions as such people should adopt coping strategies. Research institutions should develop drought forecasting models and enhance early warning systems to minimize negative impacts of drought to vulnerable groups. Consequently, there is need to increase targeted training and development programmes towards areas of scarcity and comparative advantage.

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