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# Re-evaluating emergency water supply in 'complex droughts'[1] in Africa

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IN MID 2002, the international community were alerted to humanitarian crisis in southern Africa described as a regional drought and associated food insecurity crisis, due in part to adverse climatic conditions for two consecutive growing seasons (FewsNet, Reuters, USAID, FAO). Up to 16 million people were reported to be at risk from famine in Malawi, Zambia and Zimbabwe and to a lesser extent Lesotho, Mozambique and Swaziland. In addition to unfavourable climatic conditions and food shortages these countries all had high prevalence of HIV/AIDS and commentators began to emphazes the reinforcing nature of chronic illness and food insecurity.

The definition of drought is quite broad but is generally understood as a problem related to water scarcity. Lack of timely and sufficient rain can have a catastrophic affect on rain fed agriculture leading to food shortages; and a lack of water for domestic use can have a serious impact on health. Typically, as a period of drought progresses surface water and soil moisture begin to disappear leading to greater reliance on groundwater for both irrigation and domestic use. As the Water table drops, water levels in bore holes and shallow well are reduced causing some to cease operating. This results in increased stress being placed on neighbouring or deeper boreholes increasing the probability of pump breakdown and salt-water intrusion through over use. Eventually communities may be forced to travel long distances to collect safe water or may switch to other local unprotected water sources, which have obvious associated health risks. In unmitigated cases drought can lead to famine and displacement of large populations.

In these situations the first consideration for humanitarian actors should be to support communities to remain within their own environment and protect productive assets, such as breeding livestock, tools and land (Eele: 1993) and provide necessary service such as food and water in an attempt to halt the downward spiral towards famine and displacement. Past research has also noted that in severe famines more people die from disease (including those related to poor water and sanitation) than of starvation alone. Many societies have developed their own coping strategies for resisting famine and will therefore benefit from projects which aim to support these. If people are supported through the most difficult time then they are in a better position to 'bounce back' once the rains return. Drought understood in this way has guided past intervention towards addressing the problems of food insecurity through nutritional support in the form of food aid followed by agricultural input projects; and responding to the problem of water scarcity through the construction of alternative or deepening of ground water sources. These were typical responses to the last major drought experienced in southern Africa in 1992-93 and in some respects interventions in 2002 and 2003 followed this tried and testing methodology. INGOs in partnership with WFP have delivered food aid and agricultural inputs to vulnerable populations and many actors submitted proposals aimed at bore hole construction.

However, whilst mitigating some of the extreme symptoms of the crisis, these methodologies may not offer the most efficient assistance to these crisis-affected communities. This paper presents the findings from a recent field survey in Mulanje district in Malawi, which suggests the need for a re-evaluation of traditional emergency water supply interventions in some 'droughts'.

## Survey Location

Mulanje district is located in Southern Malawi. Ninety percent of the population are smallholder farmers who are chronically food insecure producing only enough food to last 2-3 months of the year. They have been badly affected by the current crisis. Like other parts of Malawi HIV/AIDS prevalence rates are extremely high (16.4%) and this is reinforcing problems caused by the food shortages. Oxfam GB, present in Malawi since 1996, has been working in Mulanje for the past few years developing sustainable livelihoods projects in partnership with the community. The water supply infrastructure in Mulanje district is a mixture of community tap stands fed by gravity fed water schemes and hand pumps fitted to borehole or shallow wells. Baseline data indicated that there were a large number of existing water points in Mulanje district which were non-operational therefore resulting in many communities in receipt of food aid without access to safe water. Oxfam's emergency response programme took a holistic public health approach to the crisis addressing both food security and poor health environments, which exacerbate the affects of poor nutrition. Increasing community access to safe water formed a crucial part of this approach.

[1] Various terms have emerged to describe the type of crisis experienced by Southern Africa including 'Complex Drought' (USAID) and 'New Variant Famine' (de Waal). The aim is to differentiate the current acute food insecurity in areas with high HIV/AIDS prevalence from previous drought-famines in Africa.

## Methodology

Affected communities were not displaced from their home environment and were spread over a large geographical area making targeting problematic. In order to establish community access or lack of access to safe water and therefore identify areas in most need for intervention a comprehensive survey was carried out. This involved a full mapping exercise utilizing a methodology developed by Water Aid in Malawi (Water Aid: 2003) (with their agreement) but it was adapted slightly to meet the time constraints and specific focus of an emergency response programme.

The survey involved visiting every water point in four Traditional Authorities in Mulanje, with a combined population of 269,507. The local District Water Office personnel, with good local knowledge, were mobilized to collect the data and were supported logistically. Information on construction and operational status were documented and the GPS (Global positioning System) coordinates were recorded using simple hand held units. A GIS (Geographical Information System) consultant was commissioned to produce electronic maps and a comprehensive database using GIS software. Water point densities (numbers of people per water point) were calculated using rural population statistics from the 1998 national census carried out by the National Statistics Office based in Zomba. Monitoring and quality control of data was carried out during the survey by Oxfam staff and the consultant. Non-functioning water points were revisited for more specific information gathering to establish reasons for extended down time. The results of the survey are discussed below.

## Survey analysis and results

During the survey 2029 improved community water points (ICWPs) were surveyed – 1375 tap stands and 654 hand pumps. Over half (52%) of these were found to be non-operational - 893 (65%) of tap stands and 165 (25%) of hand pumps were not working (Oxfam, 2003b). A quick calculation suggests that for a population of 269,507, 1058 functioning water points provides an average of 1 water point per 254 people, which is very close to meeting the sphere standard indicators for water supply during emergencies and the government of Malawi guidelines for community water supply. However the benefit of producing GIS electronic maps enables a more accurate picture of access to water to be ascertained. The maps showed that the distribution of water points in relation to population was severely uneven at both macro and micro level with many water points clustered in particular areas and that some areas had a greater proportion of water points non operational than others offering a lack of alternative sources. From this we were able to identify, based on need, the most vulnerable communities for immediate assistance. For example in the Traditional Authority (TA) of Laston Njema there was less than 1 operational water point per 1000 people with many communities having to walk more than 2/3km to reach their nearest water point (Sphere standards indicate a maximum distance of 500m). Also near Mpala health centre in TA Mabuka a population of 9847 have only 7 functioning ICWPs from an existing number of 67 (only 10% or 1 ICWP per 1407 people) (Oxfam 2003a). Villages with non-functioning hand-pumps were revisited and occupants interviewed to try to gage the reason for their non-operation and extended downtime and therefore inform the type of assistance needed. Unlike previous droughts in Southern Africa non-operation was not a result of water scarcity and water levels had remained fairly stable. Nearly all were non-functioning as a result of hardware and management problems (ibid). Therefore intervention focused on the repair of existing water points rather than borehole drilling.

Development actors in Malawi report a mixed success rate for community based management systems but normally experienced problems seem to have been compounded by the current crisis. Collaboration with colleagues working on food security activities established that after two poor agricultural seasons disposable incomes of a largely subsistence population have been greatly reduced and other issues such as food security and caring for the chronically sick have taken priority (ibid). There is a tendency for families dealing with food shortages and especially those affected by HIV/AIDS to increase their consumption of assets in an attempt to combat the effects of disease and hunger and also because the prospect of an early death raises the opportunity cost of time (Macpherson et al: 2003). This reduces investible resources within a community resulting in fewer resources available for water and sanitation activities. In addition a local NGO in Malawi (Freshwater) reported that since 1994 many village water committees have been decimated by chronic illness. Therefore knowledge relating to pump maintenance and cost recovery techniques are being lost before they can be transferred to younger generations and combined with the growing effects of economic marginalisation result in basic maintenance issues not being addressed, leading to a failure of the community based management system model.

## Key finding and lesson learnt

HIV/AIDS and poverty appear to be reinforcing each other and sparked by trigger events such as 'drought' are creating a new type of emergency with a distinct profile – a 'new variant famine' (de Waal: 2003) or 'complex drought'. In this context traditional famine coping strategies which often assist communities to recover from drought become less available and less viable and this calls for a re-evaluation of traditional humanitarian response strategies (ibid). This survey whilst providing essential information for targeting an emergency response also revealed other interesting points for consideration. An appreciation of these points should form the basis for the design of future emergency water supply interventions in drought related crisis in high HIV prevalence areas. These are points are summarised below:

- There is a need for a broader understanding of drought. Situations commonly described, as 'drought' may not impact directly, in the traditional sense, on availability on safe drinking water. Definitions of drought can be flexible. In Malawi the periods of erratic rain and prolonged dry spells being described by many actors as 'drought' may have created 'drought' related problems for rain fed agriculture but in hydrological terms have not had the same impact on ground water, with water table levels remaining pretty healthy.
- Therefore the normal direct impact on the availability of water and the operation of ground water sources (described above) has not been realised. In this instance traditional humanitarian drought interventions, which focus on the construction of new or deepening of ground water sources, are neither appropriate nor necessary. If ground water scarcity is not the problem, interventions, which focus on repairing existing water points, are a more efficient use of time and resources.
- The vulnerability profile of the population is different than for past drought related crises. Those at most risk are scattered throughout a sedentary population. Preventative interventions aimed at supporting people within their own communities present their own logistical problems related to efficient and appropriate identification and targeting. GIS can provide a very useful tool in this regard helping to identify those in most need from a large population or geographical area.
- Indirect affects on water and health may be less visible, but nevertheless, may impact severely on the progression of the crisis. Poor weather and HIV/AIDS impact negatively on food production and therefore on disposable incomes and safety nets. This results in less investible resources within a community and therefore less money to available for maintaining community water points. There is a need for those offering assistance to acknowledge these links.
- HIV/AIDS pandemic has other implications for community based management systems. Typically water committees of 10 people are selected from the local community to manage the operation and maintenance of each water point and who receive specific one off training to that effect. High morbidity and mortality rates are impacting on the longevity and sustainability of these structures, suggesting a need for more frequent and inclusive community training.
- Such crises are less likely to be short lived. The post rain recovery normally experienced in past drought-famines is not applicable here. The nature of HIV/AIDS is more likely to leave a substantial proportion of the population in chronic poverty and chronically food insecure over the long term requiring more long-term commitment from humanitarian actors. In this instance a more developmental approach may be more appropriate. This requires a re-evaluation by both NGOs and donors of appropriate programmes including re-evaluating programme length and less restrictive funding criteria for emergency interventions.

## Conclusion

The reality of the HIV/AIDS pandemic in combination with poverty leave many people in southern Africa acutely vulnerable to physical shocks. With HIV prevalence set to remain high for the foreseeable future, similar emergency situations are likely to persist. In this instance traditional drought relief programmes which were informed by an understanding of 'drought' as a water scarcity problem may not the most appropriate use of time and resources since water scarcity is not the main problem. Future assistance strategies should aim to gain a broader understanding of the dynamics of the overall situation and develop appropriate interventions, which address both immediate and chronic needs related to water and sanitation and the acknowledge their connectedness with other sectors.

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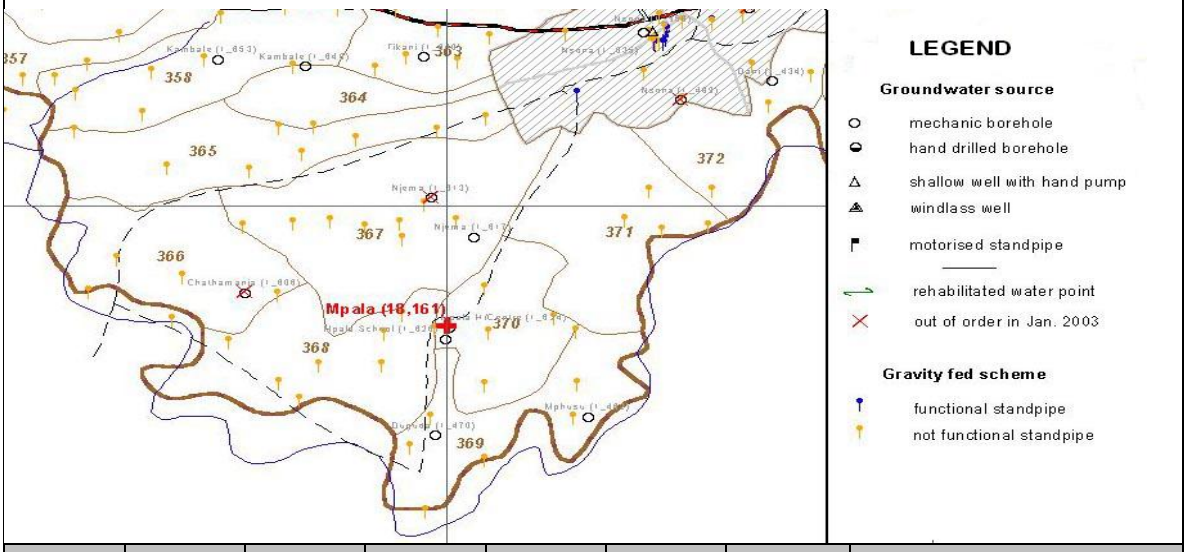
FUNCTIONING IMPROVED WATER POINTS FOR CATCHMENT POPULATION OF MPALA HEALTH CENTRE, MULANJE DISTRICT




| EA Ref from map | Total Population | Handpump working | Handpump not working | Standpipe working | Standpipe not working | Totals | Notes |
|---|---|---|---|---|---|---|---|
| 358 | 998 | 1 | 0 | 0 | 9 | 10 | Existing water point density is good at 1 ICWP for every 147 people. However 90% are not currently functioning reducing functional ICWP density to 1 ICWP for every 1407 people, which is very poor and well below the recommended standard of 1 ICWP per 250 people (GoM/SPHERE). Therefore larger populations have to walk well over the recommended limit of 500m and many over 2km. As a result many resort to localised but unprotected water sources as an alternative. |
| 364 | 777 | 1 | 0 | 0 | 1 | 2 | |
| 365 | 830 | 0 | 0 | 0 | 9 | 9 | |
| 366 | 831 | 0 | 1 | 0 | 4 | 5 | |
| 367 | 1574 | 1 | 1 | 0 | 7 | 9 | |
| 368 | 1009 | 0 | 0 | 0 | 9 | 9 | |
| 369 | 1015 | 2 | 0 | 0 | 7 | 9 | |
| 370 | 860 | 1 | 0 | 0 | 4 | 5 | |
| 371 | 1098 | 0 | 0 | 0 | 4 | 4 | |
| 372 | 855 | 1 | 1 | 0 | 3 | 5 | |
| Totals | 9847 | 7 | 3 | 0 | 57 | 67 | |
| % | | 10 | 5 | 0 | 85 | 100 | |

**Figure 1.**