

**DROUGHT RELIEF AND INFORMATION MANAGEMENT:
COPING INTELLIGENTLY WITH DISASTER**

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PREFACE

This consultancy was conducted in response to a request from the Family Health Division of the Ministry of Health in March of 1983. This mission was financed under the Nutrition Planning Project of the United States Agency for International Development. The terms of reference for this consultancy are provided in Appendix 1. This mission was financed under the Nutrition Planning Project of the United States Agency for International Development. The terms of reference for this consultancy are provided in Appendix 1.

This project is a follow-up to an earlier consultancy by Ms. Victoria Quinn of Cornell University's Nutrition Surveillance Center and UNICEF which evaluated the Botswana nutritional surveillance system. Likewise, this consultancy was also coordinated by the Nutrition Surveillance Center of Cornell University in Ithaca, New York.

The principal aim of this project was to explore the linkages between nutritional surveillance, other data bases and the pressing problems of the day. This led quickly to the area of drought, and in particular, the efforts needed to improve the information resources required for the planning, implementation and evaluation of relief activities.

I arrived in Botswana on the 28th of April and departed on the 21st of June. During that time visits were made to Kanye, Mochudi, Maun, Tutume, Francistown, Derowe, Kang, Ghanzi and points between. Throughout my stay in Botswana, considerable assistance and guidance has been provided by representatives of several Ministries. While those who have assisted me are far too numerous to list by name and station, my thanks and appreciation are heartily extended to all of them. In particular, I would like to thank Carol Heald of the Ministry of Finance and Development Planning and John Borton of the Food Resources Department for sharing their insight and extensive backlog of files with me. Special thanks are also extended to Tshire Maribe of the Ministry of Health who coordinated my investigation and accompanied me on the field trips. Finally, thanks are due to Beverly Pheto for typing this report on such short notice.

All opinions expressed in this report are those of the author alone and are not intended to reflect the official policy positions of the Government of Botswana, USAID, Cornell University or UNICEF. Responsibility for all errors and omissions rests with the author alone. Please forward any comments and questions to S. Tabor, 32 Oude Rijn, 2312 HE Leiden, Holland.

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I. SUMMARY AND RECOMMENDATIONS

1.1 Summary

Acute food shortages resulting from drought have occurred repeatedly in Botswana throughout recorded history. According to an examination of past meteorological evidence, the current spate of dry weather in Botswana is likely to continue through the end of this decade.

Vulnerability to food shortages during drought is conditioned by a wide range of factors. This includes the dependence of a large share of the population on a fragile semi-arid land base, the poverty and widespread undernutrition of many of the children, the skewed distribution of control over productive assets in the rural areas, the fiscal dependence of the national economy on the international economy, and the rapid growth in the consumption of water accompanying the accelerated economic growth of the past decade. The combination of these factors with the erosion of traditional survival strategies as a consequence of economic development, contribute to the vulnerability of the population to acute food shortage during a drought.

The consequences of the 1982/83 drought included a decline in staple food production from 49,000 tons in 1981 to 16,000 tons in 1982, an increase in the prevalence of undernutrition from 27 to 31 percent of the under-five year old population and an increase in the cattle offtake rate from 23 to 28 percent. The higher offtake rate for cattle was concentrated amongst those with small herds. Owners of ten cattle or less experienced a death rate of thirty percent as opposed to those owners of sixty cattle or more whose death rate is estimated to be approximately fifteen percent.

The relief campaign mounted in 1982/83 was the most extensive in Botswana's history. The campaign has been extended through 1983/84 with the declaration of a second year of drought.

During the 1982/83 relief campaign, nearly forty-five percent of the population regularly received relief food, 30,000 workers gained employment in labor based relief projects and 5,000 participants gained part-time employment as hand-stampers in the school feeding programme. From April 1982 to April 1983, an estimated 27,000 tons of foodstuffs were distributed in all relief feeding activities.

The 1983/1984 relief campaign will be even larger than the 1982/1983 programme. Certain secondary school students will be included in the feeding

programme; the labor based relief project budget will be doubled to 6 million Pula and twenty kilograms of free seed will be distributed to each farm household. The severe shortage of water in Gaborone has required that, as of June 1983, all of the Water Resources Department's ground-water drilling efforts be concentrated in and around Gaborone. Including a domestic cost for multi- and bilateral food donations, the expected cost of the 1983/84 relief effort is between thirty-three and thirty-five million Pula, an amount equivalent to sixteen percent of the total development budget estimated for 1983/84.

The mechanics of relief distribution in 1982/1983 were generally good, however problems did arise. In certain areas, food delivery was sporadic, haphazard and groups of beneficiaries were neglected; many labor based relief projects were hastily designed, poorly supervised and recorded abysmal productivity rates; remote area dweller projects were activated late in many areas and over-funded in others and the distribution of the subsidized agricultural stockfeed appeared to benefit primarily the larger cattle holders. In general, efforts to target assistance geographically and socially were hampered by inadequate information and experience in relief dissemination. The mismanagement of relief dissemination and the confused implementation of relief programs can be traced to faults in the communication of information needed to properly manage the campaign.

The clear transmission and reception of drought relief management information appears to be the exception rather than the rule in the current relief campaign. The primary users of drought relief information are the member ministries of the Inter-Ministerial Drought Committee and their counterparts on the District Drought Committees. Relief information can be divided into two categories: (1) that which is primarily used to correct or guide the implementation of specific relief projects and, (2) that which is customarily reported through government line agencies and can be used to base decisions on planning, targeting and evaluating relief efforts. Very little of the second type of information appears to reach those who must plan and administer drought relief activities, particularly at the district level. Problems in the dissemination of the 'normal-channel' government data include the lack of communication between data-producers and data-consumers, a tendency towards extreme parochialism in several of the Ministries and a tendency for data to be 'centrally-pulled' from the field to Gaborone.

The development of an Early Warning and Monitoring System to aid in the

improvement of relief management has been repeatedly recommended since the disastrous drought of the early 1960's. To date, little action has been taken to implement these suggestions. The feasibility of implementing an Early Warning and Monitoring System are better now than ever before due to the recognition that the costs of relief management (and the costs of mismanagement due to inadequate information) are very high, since the data bases to be used have become well known and established and because Botswana has been an active participant in the SADCC Regional Early Warning System negotiations.

An Early Warning and Monitoring System that is simple, timely and clear should be developed. Such a system should be based on meteorological data, agriculture/livestock data, food prices, nutritional surveillance data and semi-structured district reports. A number of changes will have to be made in reporting, tabulating and dissemination procedures if these data bases are to be effectively utilized in an Early Warning and Monitoring System for drought relief management.

Effective cooperation among several Ministries will be required if an Early Warning and Monitoring System is to be established. An Early Warning System coordinating committee should be formed and led by the Secretary of the Inter-Ministerial Drought Committee. Representatives from the Ministry of Agriculture, Ministry of Health, Meteorology Department, Central Statistics Office and the Food Resources Department should sit on the Committee. This Committee will be responsible for the overall supervision of the Early Warning and Monitoring System which will include decisions on report format, distribution scheduling, interpretation of results and the review and improvement of the data bases utilized in the reports. To facilitate implementation of such a system, personnel and computing facilities should be provided to the Committee and participation in the SADCC Regional Warning System should be continued and broadened to include departments other than the Planning and Statistics Department of the Ministry of Agriculture and the Department of Meteorology.

1.2 Recommendations

1. More effective (a) targeting of relief assistance to vulnerable groups and distressed geographic regions should be encouraged. (b) This should include an emphasis on direct feeding of the malnourished children. (c) A change in relief dissemination procedures, at this point in time, probably would not add to the confusion of those administering the relief campaign in the districts.

2. An assessment should be made of the nature of the (a) dependency effects of prolonged drought relief on a large segment of the population. An investigation into the dependency effects of relief distribution through clinics and on the impact on self-help efforts by labor based relief projects should be sanctioned by the Inter-Ministerial Drought Committee. (b) An assessment should also be made of the end-use of the vulnerable group feeding program and the labor based relief projects. It is important to assess the flow of benefits accruing from these projects in order to design measures to redirect that flow towards the needy.
3. An examination should be made of the logistic bottlenecks in delivering foodstuffs and a solution to these logistic bottlenecks should be sought. To improve communication and management between those planning food shipments in Central Government and those operating the chain of depots in the districts, it is suggested that the depot staff should be seconded from the Supplies Department to the Food Resources Department of the Ministry of Local Government and Lands for the duration of the drought. All supervisory and management obligations for the depot staff should rest with the Food Resources Department.
4. Long term planning for drought relief should be given a high priority by the Inter-Ministerial Drought Committee and a contingency plan for relief efforts in future years, under different budget constraints, should be devised.

A technical manual on how to design, operate and evaluate the drought relief programmes should be produced and disseminated to the District Drought Committees. This would serve to reduce the level of operational confusion that appears to pervade many of the District Drought Committees. The commissioning of this manual should be the responsibility of the Inter-Ministerial Drought Committee.

1. An Early Warning and Monitoring System should be established under the direction of the Secretary of the Inter-Ministerial Drought Committee. Besides the Secretary of the IMDC, the Coordinating Committee for an Early Warning and Monitoring System should include members from the Ministry of Agriculture, Ministry of

Health, the Meteorology Department, the Central Statistics Office and the Food Resources Department.

2. Existing data bases on rainfall, agriculture/livestock, food prices, and human nutrition should form the nucleus of the monitoring system. Reporting and tabulation procedures for several of these data bases must be modified so that they are of use to those who are responsible for the management of the drought relief effort.
3. The Inter-Ministerial Drought Committee should lend its active support to the SADCC Regional Early Warning System negotiations. Efforts should be made to ensure that local efforts, taken under the banner of the SADCC Regional Early Warning System, are directed primarily at satisfying the information needs of those involved in the domestic relief effort. Botswana's participation in a regional early warning network should be encouraged and appropriate personnel and computing facilities should be provided to the Coordinating Committee in order to develop the national Early Warning and Monitoring System.

II. CAUSES AND CONSEQUENCES OF ACUTE FOOD SHORTAGE IN BOTSWANA

2.1 Food Shortages and Drought

In Botswana, the primary cause of acute food shortages is drought. The severity of drought differs according to the environmental characteristics of the nation, the dependence of the population on economic activities constrained by water availability and by the ability of the society, and most importantly, the government, to react to water shortage in time to offset the deleterious consequences of drought. The variability in impact associated with the incidence of drought in Botswana calls to question the use of any one static, universal definition of drought, or food problems resulting from a drought. Following Sandford, it is better to consider drought in a relativistic framework, in which drought is defined as "a rainfall-induced shortage of some economic good brought about by inadequate or badly timed rainfall." (Sandford, 1977) In fact, a drought situation arises when the supply of water is insufficient to meet the constellation of water needs in the society as a whole. Under these definitions, practically every year in Botswana would qualify as at least a mild drought year.* However, the ability to differentiate between a mild and a serious drought situation appears to be a facet of cultural 'common sense' in Botswana.

Available evidence indicates that serious droughts have occurred with alarming regularity in Botswana over hundreds of years of recorded history. In the 19th century, serious prolonged droughts were recorded between 1845 to 1851 at Kolobeng, in 1862 and in 1876/77 in Shoshong, and in 1879 and 1896 in Kweneng. Likewise, the early part of the 20th century was characterized by a series of mild drought years, peaking in the disastrous combination of an outbreak of foot and mouth disease and severe drought in 1933. (Hitchcock, 1979)**

* A recent assessment of the sufficiency of water for arable crop production suggests that, in good crop years, only sixty to eighty percent of the moisture requirements for optimum maize production are reached. Accordingly, if the optimum is taken as a guide, then the best of years is a mild drought year for maize production. (Meteorology Department, 1983)

** The 'great starvation' of 1925 and the drought and foot and mouth epidemic of 1932/1933 are events of historical importance used by the Census Survey Teams in order to aid in the identification of birth dates. (See Appendix 2)

From the 1930's onward, droughts affecting the livestock population became far more frequent as the recovery of the livestock herd from the rinderpest epidemic of the 1890's placed a heavy strain on Botswana's fragile environment. (Sandford, 1977) The most devastating drought of this century began in 1960 and lasted until early 1966, during which time near continuous rainfall failure coupled with uncontrollable outbreaks of foot and mouth disease led to the loss of nearly a third of the nation's livestock and resulted in the extension of famine relief assistance to approximately one-quarter of the population. On the tail of the drought in the early 1960's, came the shorter-period droughts of 1967/68 and of 1972/73. By comparison with the previous ten years, the mid-1970's emerged relatively unscathed by water shortage. Crop production and total herd size increased at a high, although unsteady, rate until the drought of 1979/80. Only nine months after the previous drought was declared to have ended did drought have to be declared again in April of 1982. The poor timing and shortage of rains in 1982 followed by similar circumstances in 1983 led to the declaration of a second year of drought for 1983/84.

The vagaries of rainfall cannot be predicted with any certainty on a year to year basis, much less on a week by week basis. However, statistical analysis of seventy years of rainfall data from Southern Africa, by P.D. Tyson, finds that total rainfall availability tends to vary with a quasi-twenty year oscillation. According to his projections, the period from 1980 to 1990 will be in the trough of the decade oscillation. Tyson estimates that the dry spell beginning in 1982 will continue until 1992 and that a more wet period will follow until the end of the century. (Tyson, 1979) If Tyson's environmental predictions are correct, and these do appear to be the best available weather map for the near-term future, then it is likely that the spectre of drought will hang over Botswana for the remainder of this decade.

The linkages between drought and acute food problems can be found in the set of factors that condition vulnerability to a shortage of water. These are characteristics of the society and of the physical environment, changing as both the society and the environment evolve.

2.2 Vulnerability to Drought

Many of the Botswana subsist off of a semi-arid, marginal climate on an agronomic base of poor soils. The degree of physical-environment induced vulnerability increases as one moves east to west, northeast to southeast and

southwest to northwest. The susceptibility to drought is compounded by the rapid degradation of the terrain due to the overgrazing of livestock. At present, the number of cattle is approximately three million with small stock bordering on the two million mark. While debates on the carrying capacity of the land persist, there is no doubt that serious overgrazing, creeping desertification and increased vulnerability to drought are closely linked.

For the society as a whole, mass poverty and inequity are the major factors predisposing many to the vulnerability of a drought induced food shortage. Drought typically strikes areas with already high rates of undernutrition. In the 'good' years of 1977 and 1978, roughly a quarter of the children below the age of five were classified as being at-risk of undernutrition (e.g. had a weight for age below eighty percent of the Harvard Growth Standard). Infant mortality rates are on the order of 100 per 1000 live births. It is on this base of widespread chronic undernutrition and already high infant mortality, that the food shortages and diseases triggered off by a drought-induced shortage of water are added to.

Furthermore, the bulk of the population depends directly on economic activities that are constrained by the need for an adequate and timely supply of water, namely agriculture. While the economic importance of agriculture to the national economy has declined over time, from 45 percent of GDP in 1968/1969 to 12.2 percent in 1980/1981, there are 84,200 traditional farms still in existence and an estimated 83 percent (1981 est.) of the population continues to reside in the rural areas. Even in a year of abundant rainfall, the domestic agricultural output is insufficient for the consumption needs of the population. In 1981, 28,300 tons of sorghum and 21,500 tons of maize were produced domestically, against a total consumption requirement of nearly 130,000 tons of food grains. This can be compared with a drought year, such as 1982, in which total domestic foodgrain production fell to 15,000 tons. The skewed distribution of control over productive assets in the rural areas also contributes to the vulnerability of certain segments of the population. The top 10% of the traditional cattle farms controlled approximately 44 percent of the cattle population (1981 est.) The top two percent of the traditional farms, those with holdings above 15 acres, control 19 percent of the planted lands. In 1981, there were 84,200 traditional farms and 360 commercial farms, yet the commercial farms accounted for 67 percent of total cash crop production. Roughly one-third of the rural population is estimated to have no access to livestock at all.

Because of the widespread use of cattle and oxen for draft power, access to livestock frequently conditions the ability of the farmer to plow his lands.

Another factor that indirectly contributes to a high vulnerability to drought induced food shortages is the dependence of the nation on the international economy for a substantial share of its gross domestic product. In 1979/1980, mining provided 32 percent of GDP and 37 percent of government revenue. With the fall in international diamond prices in 1981, the contribution of mining to GDP fell to 26 percent with a similar, sharp decline in government revenue. Employment in the South African mines is a critical source of income supplementation for many families in rural Botswana. In 1979, it was estimated that earnings from mine-workers contributed to the livelihood of approximately 60,000 Botswana citizens. Since 1976, however, employment in the South African mines has declined by 56 percent, from 40,390 in 1976 to 17,959 in 1981. With the present drought encompassing the bulk of the Republic of South Africa as well, it is likely that opportunities for mine employment will continue their downward slide.

While vulnerability is conditioned by impoverishment and dependence on several water-constrained productive activities, it is also exacerbated by the achievements in economic growth of the 1970's. The average growth rate, of GDP in constant prices, between 1973/74 and 1980/81 was 10 percent, fueled primarily by the expansion of mineral exports. During the period of 1971 to 1981, the urban population of Gaborone, Francistown, Lobatse, Selibe-Phikwe, Orapa, Jwaneng and Palapye rose from eight percent to 17 percent of the total population. Population growth as a whole during this period was on the order of 4.6 percent per annum, reaching slightly more than 940,000 in 1981. (Central Statistics Office, 1983) Rapid population growth, increased urbanization and economic expansion were coupled with the development of several large-scale, capital intensive industrial projects which contributed mightily to the estimated five percent per annum growth in water consumption. It is the combination of all of the above factors and trends which condition the vulnerability of a large share of the population to severe food stress during the course of a drought.

2.3 Consequences of Drought

The first noticeable consequence of drought in Botswana is the failure of crop production. At the thick of the drought in 1965, production of sorghum and maize was down to a total of 5,000 tons. With the good rains of 1967, crop

production rose to nearly 42,000 tons. During the drought year of 1979, sorghum production was 4,300 metric tons and maize production was 2,250 metric tons for a total production of 6,500 mt's. Adding millet, beans, pulses and ground nuts to the total for 1979 would add roughly 2,000 tons of additional foodstuffs, well below the 'good year' production levels. In 1980, with the resumption of the rains, total production of the four main food crops (sorghum, maize, millet and beans) rose to just under forty-five thousand metric tons. (Ministry of Agriculture, Agricultural Census, various years). By 1982, this had declined to 17,000 tons and early 1983 forecasts are on the order of thirteen to fifteen thousand tons. (see Table 2.1) The decline in domestic crop production triggers the increase of both commercial and government operated emergency imports and the activation of a number of relief campaigns. Well before this happens, however, a number of traditional mechanisms are activated to cushion to population from a shortage of foodstuffs.

The common image of traditional mechanisms designed to cope with drought are the elaborate rain-making ceremonies and ritual exorcism used to rid the villages of drought causing spirits. These measures are called into action during drought, and have been shown to be a most important means for reinforcing political hierarchy in the villages. Complementing these symbolic measures are a number of traditional means used to redistribute the burden of drought induced economic stress.

Traditionally, the harvest from communal fields (lepasha), worked under the summons of the chief, would be stored in village graneries (sefala) near the kgotla. In times of drought, this grain, plus other tributary offerings, would be sold at reduced prices or given to the poor in exchange for work. (Prah, 1979). At present, the availability and the plentitude of the relief supplies appear to have negated the use of village granery food redistribution. Similarly, in times of hardship, village chiefs would organize bands of villagers for hunts or for self-help projects such as the building of communal stores, dams and fences. (Hitchcock, 1979) This function seems to have been assumed by the government with the use of labor-based relief projects.

When drought becomes severe, assets are sold, opportunities for seasonal employment are sought (majako for example) and people seek opportunities to gain income from sources unaffected by the weather. However, these opportunities are generally quite limited in many village areas. Sheppard and Clement-Jones estimated that during the 1979 drought in Kweneng, rural

TABLE 2.1

CROP PRODUCTION IN BOTSWANA ***

| <u>Year</u> | <u>Sorghum Production</u> | <u>Maize Production</u> | <u>Total Production</u> |
|-------------|---------------------------|-------------------------|-------------------------|
| | (metric tons) | | |
| 1965 | 3,174 | 1,905 | 5,079 |
| 1966 | 18,140 | 1,361 | 19,501 |
| 1967 | 36,280 | 5,442 | 41,722 |
| 1968 | 10,400 | 7,400 | 17,800 |
| 1969 ** | 29,800 | 12,800 | 42,600 |
| 1970 ** | 7,800 | 2,100 | 9,900 |
| 1971 ** | 73,300 | 16,600 | 89,900 |
| 1972 | 68,300 | 10,300 | 78,600 |
| 1973 | 10,300 | 22,300 | 32,600 |
| 1974 | 72,393 | 33,893 | 106,286 |
| 1975 | 33,843 | 28,671 | 62,520 |
| 1976 | 55,540 | 62,587 | 118,227 |
| 1977 | 33,024 | 35,404 | 68,428 |
| 1978* | 15,500 | 14,000 | 29,500 |
| 1979 | 4,300 | 2,250 | 6,550 |
| 1980 | 29,100 | 11,600 | 30,700 |
| 1981 | 28,300 | 21,415 | 49,715 |
| 1982 | 3,870 | 12,400 | 16,270 |

* Traditional farms estimate only.

** Excludes Boteti River and Western State Lands.

*** Source: Ministry of Agriculture, Department of Planning and Statistics.

income from beer brewing and the supply of wild foods had been cut in half. (Sheppard and Clement-Jones, 1979)

The most common form of survival strategy during a drought is movement. Several shifts of the human and animal population occur during the time of a drought. People move into more concentrated villages, larger villages, and practically anywhere there appears to be a better supply of water. For some, drought is coped with by a move out of the sandveld economy into the towns of Botswana or the times of South Africa. (Solway, 1980) Formerly, the Sarwa of the Kalahari responded to drought by remaining socially mobile and fragmenting into small groups. (Prah, 1979) Silberbauer describes this pattern of dispersal and reunification as social hibernation. (Silberbauer, 1979)

During times of stress, the reciprocity obligations, or favors, of kin are called into effect. The household size of the relatively better-off portion of the extended family extends even farther and requests for circulation of cattle within the family, through mafisa, increase. (Solway, 1980. Vierich and Sheppard, 1980)

During drought, control of a sufficient amount of cattle will often determine the ability of a family to cope with the drought and to recover quickly thereafter. Access to cattle during drought provides a source of milk, meat and draught power. Vierich (Vierich, 1979) found during a drought in Kweneng, that 22 heads was a critical herd size. Those with fewer than that would suffer more from malnutrition and were significantly less able to plough. Vierich and Sheppard (Vierich and Sheppard, 1980) found that there was a critical herd size of 15 to 18 for the hardveld and 22 to 25 for the sandveld in order to maintain the herd size, span a team of oxen and maintain a breeding stock. These findings were reinforced in a recent study of the livestock sector for Carl Bro International (Carl Bro International, 1982).

From a survey in Kweneng, during the 1979 drought, Sheppard found a 60 percent increase in the number of cattle deaths compared to a more normal rainfall year. Between 1981 and 1982, cattle deaths reported for the nation as a whole rose from 359,000 to 453,000, an increase of twenty-six percent. Overall offtake for the nation rose roughly five percent during that period (see table 2.2). During the prolonged drought of the early 1960's, nearly one-third of the total national herd was lost.

According to Stephen Sandford, during a moderate drought, calf mortality rates will double, adult cow mortality will rise by fifty percent, debtors

amongst the livestock owners will default on their loans and range conditions will deteriorate. During a severe drought, very few calves will be born and of those born few will survive; there will be heavy losses of cattle, the condition of animals sold will be poor and the range conditions will deteriorate very rapidly and seriously (Sandford, 1977). In addition, during a drought period, outbreaks of foot and mouth disease are likely as large herds of cattle and buffalo congregate at water points (McGowan and Associates, 1979).

In recent years, the commercialization of livestock production has also affected the ability of many to cope with drought. According to Kerven,

Once cattle began to acquire a monetary value their role as socio-economic bonds began to decline. As cattle were less often distributed along lines of kinship and other social responsibility, this effectively reduces the 'available' pool of cattle for the use of the villages. (Kerven, 1980)

Another consequence of drought in Botswana has been an increasing recognition by the central government that measures must be taken to assist those who are suffering from the adverse effects of the drought. The provision and timeliness of relief services has improved considerably since the early 1960's. To improve the preparation of the government for drought relief, several departments have commissioned relief studies and relief plans. In recent years these have included studies by Sandford (Sandford, 1977), McGowan and Associates (McGowan and Associates, 1979), and Carl Bro International (Carl Bro International, 1982) on livestock and drought, Vierich (Vierich, 1979), Solway (Solway, 1980), Vierich and Sheppard (Vierich and Sheppard, 1980) and Sheppard and Clement-Jones (Sheppard and Clement-Jones, 1979) on the social characteristics of drought and drought relief, Austin (Austin, 1980) and Gooch and McDonald (Gooch and McDonald, 1981) on the overall human relief planning and by Taylor (Taylor, 1980) and Quinn (Quinn, 1983) on nutritional surveillance and nutrition monitoring during drought. The report issued by Gooch and McDonald, for the Ministry of Finance and Development Planning included an evaluation of the 1979/80 drought relief effort and a set of guidelines for human relief during the future drought periods. This report was accepted by the Cabinet as the official plan of relief in January 1982.

2.4 The effects of the 1982 Drought

One can clearly see from the figures presented in Table 2.1 that the 1982 drought led to a sharp decline in the domestic production of basic food staples. Production of sorghum and maize declined from 40,000 tons in 1981 to 16,000 tons in 1982. What is not apparent in these figures is that this decline in food production prompted the government of Botswana to initiate the most widespread and heavily funded relief campaign in the history of the nation. As drought extends into its second continuous year, the size and scale of the relief effort will continue to rise. The 1982/1983 relief effort will be the subject of the next chapter.

From an examination of the figures presented in Table 2.2, it can be seen that cattle offtake increased from 23.2 percent to 28.5 percent during the period of 1981 to 1982. During that same period, herd losses due to death increased by 25 percent. However, these losses were not spread equally over all sizes of herds. In Table 2.3, estimates of the ratio of deaths, sales, home slaughter and purchases to the stock of total cattle, by herd size, are presented. In the traditional farms, those with herds of under ten cattle experiences a thirty percent death rate while those with more than 60 cattle suffered a death rate of about fifteen percent. For the commercial herds, the difference in death rates was roughly the same. Small herd owners, in 1982, lost nearly two times (in percentage terms) more cattle than did large owners. Small holders amongst the traditional farmers were more apt to try to replenish their herd through purchase than were the large holders and nearly all size traditional cattle farmers sold off roughly eight percent of their herd. The difference in death rates and in home slaughter by the small herd owners accounts for the higher offtake rate exhibited by these owners during the first year of the drought.

It is difficult to assess the impact of the 1982 drought, and the relief campaign, on the status of the human population. The number of children nutritionally at-risk (below 80% of the Harvard Growth Standard for Weight for Age) rose from 28 percent in 1981 to 31 percent in 1982. Generally, the prevalence of undernutrition declines in May, June, July and August after the harvest. From an average of 1978, 1980, and 1981 figures, the decline from January to July is on the order of five percent, from a peak of 28 percent in January to a trough of 23 percent in July. In 1982, the undernutrition prevalence figures did not exhibit their normal seasonal decline. Instead, the

TABLE 2.2

CATTLE OFFTAKE DURING DROUGHT AND NON-DROUGHT PERIODS, 1981 and 1982 *

| | 1981 (non-drought) ('000) | 1982 (drought) ('000) |
|----------------------------|----------------------------------|------------------------------|
| Total Cattle ¹ | 2,967 | 2,979 |
| Births | 678 | 699.7 |
| Deaths | 359 | 453.2 |
| Sales | 306 | 364.6 |
| Purchases | 92.5 | 153.3 |
| Home Slaughter | 24 | 30.3 |
| Total Offtake ² | 689 | 848 |
| % Offtake ³ | 23.2 | 28.5 |

1 - Cattle from traditional and freehold farms.

2 - Total offtake is estimated as the sum of deaths, sales and home slaughter.

3 - Percent offtake is computed as the total offtake divided by the total number of cattle.

* Source: Department of Planning and Statistics, Ministry of Agriculture, 1981 and 1982, Botswana Agricultural Statistics.

TABLE 2.3⁻¹⁶⁻

CATTLE INVENTORY DURING A DROUGHT YEAR: RATIO OF DEATHS, SALES,
HOME SLAUGHTER AND PURCHASES TO TOTAL CATTLE BY SIZE OF CATTLE
HOLDING, 1982

| Herd Size | Ratio of Deaths to Cows | Ratio of Sales to Total Cattle | Ratio of Home Slaughter to Total Cattle | Ratio of Purchase to Total Cattle |
|--------------------|-------------------------------|---|---|--|
| - Percentage- | | | | |
| <u>Traditional</u> | | | | |
| 1 - 10 | 30.4 | | 2.0 | 5.0 |
| 11 - 20 | 20.2 | | 1.3 | 2.8 |
| 21 - 30 | 17.1 | | 1.1 | 3.0 |
| 31 - 40 | 17.0 | | .9 | 2.1 |
| 41 - 50 | 12.3 | | .7 | 1.4 |
| 51 - 60 | 20.2 | | 1.6 | 1.5 |
| 61 - 100 | 15.8 | | .9 | 1.5 |
| 101 - 150 | 16.0 | | 1.1 | 1.0 |
| 151 + | 15.4 | | .8 | 2.1 |
| Total Traditional | 17.0 | | 1.0 | 2.1 |
| <u>Commercial</u> | | | | |
| 1 - 100 | 16.7 | 45.8 | 4.2 | 20.8 |
| 101 - 500 | 10.1 | 38.4 | 1.5 | 28.7 |
| 501 - 1000 | 6.5 | 35.7 | 1.9 | 24.7 |
| 1001 - 5000 | 5.2 | 35.0 | 1.2 | 19.1 |
| 5001 + | 5.7 | 30.4 | .5 | 20.9 |
| Total Commercial | 5.9 | 33.7 | 1.1 | 21.1 |
| TOTAL | 15.2 | 12.2 | 1.0 | 5.1 |

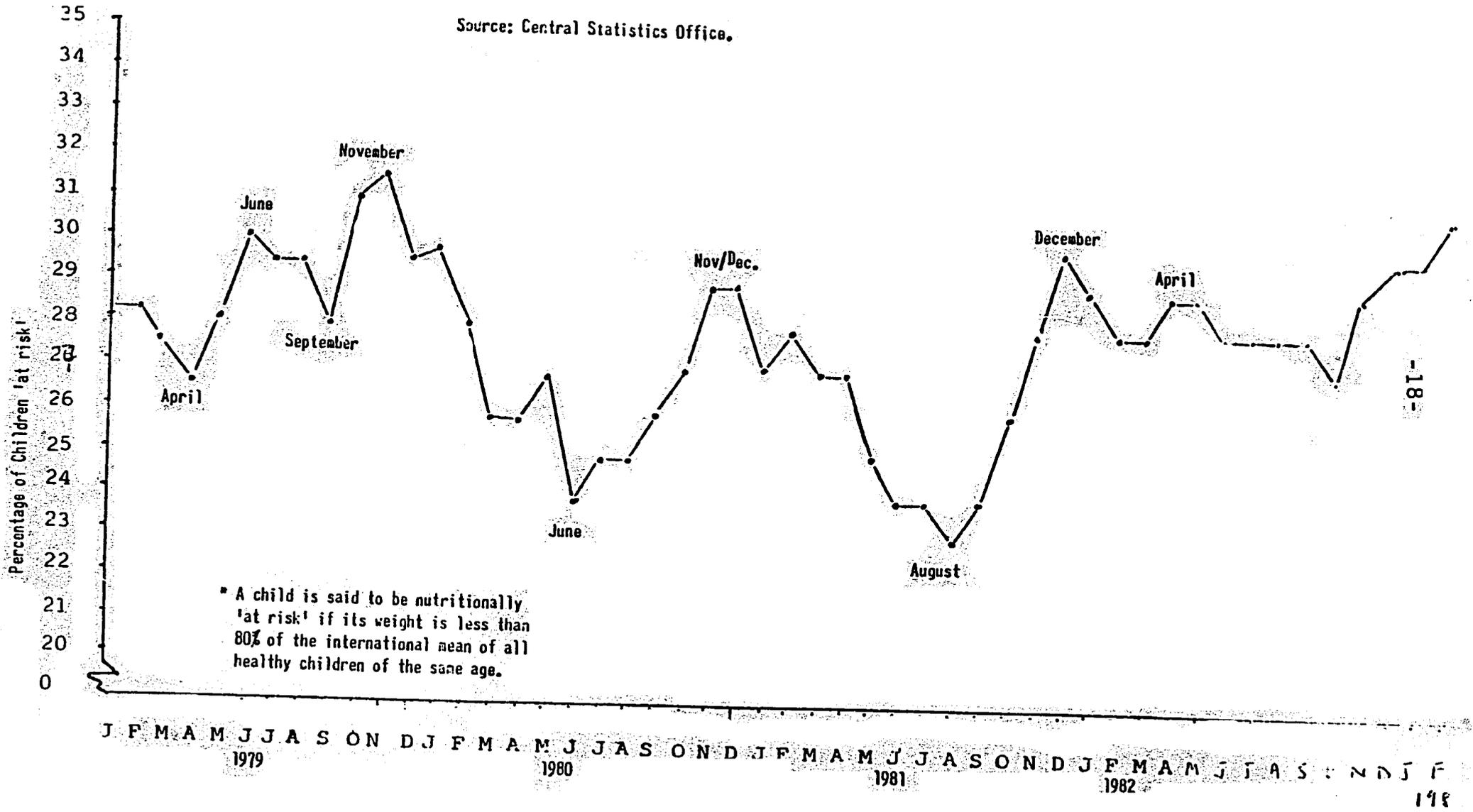
Source: Division of Planning and Statistics, Ministry of
Agriculture, 1983.

undernutrition prevalence remained steady at the 28 to 29 percent mark through most of 1982, climbing to 31 percent in January of 1983. (Nutritional Surveillance System, various reports) In March of 1983, this figure delined slightly to thirty percent, although indications are that the undernutrition levels will remain high due to the failure of the 1983 crop. (See Figure 2.1) While a four percent difference in undernutrition prevalence may seem rather small, this does mean that an additional seven thousand children under the age of five were showing signs of undernutrition.

FIGURE 2.1

PERCENTAGE OF CHILDREN 'AT-RISK' OF UNDERNUTRITION, 1979 TO FEBRUARY 1983

Source: Central Statistics Office.



III. THE 1982/83 RELIEF CAMPAIGN

In order to improve the information environment for drought relief activities, it is necessary to catalogue those activities which are part of the current relief campaign. The aim of the present relief effort is to help overcome the problems caused by drought. Since drought leads to a wide variety of problems, a wide range of relief efforts have been implemented.

3.1 The Scope of the 1982/1983 Relief Effort

During the disastrous drought of the early 1960's, food relief reached approximately one-quarter of the population (Cooke, 1979). In the 1979/80 drought relief campaign, supplementary food was distributed to roughly 20 percent of the population (Gooch and McDonald, 1979). In 1982/83 food relief reached forty-five percent of the population. From April of 1982 to April of 1983 an estimated 27,000 million tons of relief food was distributed throughout the nation (FRD 1983*). During the 1982/83 campaign, 30,000 people received an income supplement by participating in labor based relief projects, 5,000 women received payment for their assistance in the school feeding campaign, 5,000 remote area dwellers were provided with special relief programmes, approximately 4,000 cattle were purchased from poor farmers and fed to school children and 14,500 bags of stockfeed were sold at cost to needy farmers. Major logistical and administrative support for the relief campaign was provided by no less than five ministries: Local Government and Lands, Finance and Development Planning, Health, Mineral Resources and Water Affairs and Agriculture.

By international standards, 1983/84 was a year of major relief activity in Botswana. Using World Food Programme Emergency Operation Shipments as an index of international recognition of the 'seriousness' of drought induced food problems, we find that, on per-capita terms, Botswana received the third

* All future references to FRD 1983 or FRD 1982 refer to internal working documents and circulars of the Food Resources Department of the Ministry of Local Government and Lands.

highest allotment of emergency shipments of all the African states* (see Table 3.1). There are three World Food Programme projects operating in Botswana at present. The largest, the WFP324 programme for vulnerable group feeding, dates back to 1966. This programme was slated to be taken over by the Government of Botswana in 1983, but, with the onset of drought in April 1982, the program was extended through January of 1984. A brief summary of the active WFP programmes is provided in Table 3.2. In addition to the WFP, generous support has been provided by a number of donors, including the United States, the European Community and the Federal Republic of Germany. Donors contributed an estimated eight million Pula worth of food relief in 1982. (see Table 3.3)

The relief budget will expand even further in 1983/84. The budget for labor based relief projects — the major outlet for discretionary relief funds — will expand from three million to six million Pula. In 1983/84, ten million Pula has been budgeted for human relief, 3.75 million for agricultural relief and 1.5 million for water relief. Adding committed international food donations to this, which are on the order of 16.6 million Pula, would raise the total relief budget to close to 32 million Pula. This is an under-estimate of the true value of relief because the portion of internal transport costs absorbed by CTO, the salaries of many of the relief administrators and repayment of BAMB debts is not included in these totals. Adding those costs to the total would raise the overall relief budget to nearly 34 million Pula. For the purposes of comparison, the estimated total government development budget for 1983/1984 is 206 million Pula, the 1983/84 budget estimated for the Ministry of Agriculture is only 11 million Pula. A summarized relief budget for 1983/84 is provided in Table 3.4 and a more detailed listing is given in Table 3.5

3.2 Steps Taken Before Implementation of Relief in 1982

The Gooch-McDonald report on drought relief was completed in June of 1981, and accepted by the Cabinet as the nation's relief plan in January of 1982

* Other bilateral and multilateral donations would undoubtedly change this ordering of nations somewhat. The WFP ranking is provided for demonstration purposes only.

TABLE 3.1ALLOCATION OF WORLD FOOD PROGRAMME EMERGENCY FUNDS TO VARIOUS
AFRICAN NATIONS, 1982

| <u>Nation</u> | <u>Emergency Operations Completed in 1982</u> (1000 US\$) | <u>Emergency Allocation Per-capita¹</u> (US\$) |
|---------------|---|---|
| Angola | 13,044 | 1.79 |
| Burundi | 1,938 | .45 |
| Chad | 9,806 | 2.18 |
| Gambia | 5,319 | 8.87 |
| Ghana | 1,929 | .16 |
| Guinea | 4,734 | .93 |
| Mali | 16,141 | 2.24 |
| Mauritania | 18,638 | 10.96 |
| Niger | 5,407 | .98 |
| Nigeria | 2,898 | .04 |
| Senegal | 12,631 | 2.17 |
| Upper Volta | 6,282 | .88 |
| Zaire | 5,012 | .19 |
| Ethiopia | 27,010 | .84 |
| Kenya | 8,385 | .52 |
| Lesotho | 1,135 | .81 |
| Mozambique | 16,789 | 1.55 |
| Somalia | 9,972 | 2.04 |
| Swaziland | 370 | .62 |
| Tanzania | 3,437 | .19 |
| Uganda | 11,468 | .84 |
| Zambia | 98 | .02 |
| BOTSWANA | 3,194 | <u>3.99</u> |

¹ Figures are slightly inaccurate because 1980 United Nations population estimates are used to derive the per-capita allocation figures.

Source: World Food Programme, Progress Report, 31 December 1982.

TABLE 3.2

SUMMARY SHEET FOR WORLD FOOD PROGRAMME PROJECTS IN BOTSWANA

(1) WFP324: initiated January 1966

Purpose: to provide food for a supplementary feeding programme for primary school children, expectant/nursing mothers, pre-school and malnourished children.

Project Renewed: April 1971, 1979, 1983

Cumulative Expenditure: 1966 to 1979 = US \$ 27,844,900

(2) WFP 2478/Q: initiated in January 1977

Purpose: to help refugees coming from Zimbabwe (former Rhodesia)

Project Extended: through 1983

Cumulative Expenditure: 1977 to 1981 = US \$ 2,763,700

(3) WFP 2440: initiated in January 1980 to run through December 1985

Purpose: to establish an emergency strategic grain reserve to provide safeguard against food shortage in times of drought or other emergency. To stabilize price and support government plans for increased agricultural production.

Project Stocks 98% Depleted: May 1983

Cumulative Expenditure Budgeted: US \$3,122,000

TABLE 3.3

INTERNATIONAL DONATIONS OF FOODSTUFFS, 1982/83 AND 1983/84*

| <u>Commodity</u> | <u>Amount</u> (tons) | <u>Donor</u> | <u>Approximate Local Value</u> (1000 Pula) |
|--------------------------------------|-------------------------|--------------------|---|
| <u>Donations Received 1982/83</u> | | | |
| maize meal | 72 | Sefalana | 18 |
| maize meal | 25 | Trans Africa | 6.3 |
| maize meal | 6 | Barclays/Red Cross | 1.5 |
| dried skim milk | 500 | EEC | 1,425 |
| vegetable oil | 1000 | USAID | 1,353 |
| maize meal | 500 | WFP(324) | 137.5 |
| dried skim milk | 1000 | USAID | 2,850 |
| maize meal | 3422 | WFP(1291) | 752.8 |
| sorghum | 2500 | WFP(1291) | 575 |
| cowpeas | 1026 | WFP(1291) | 355 |
| maize meal | 1000 | German Red Cross | 220 |
| wheat flour | 1460 | France | 509.5 |
| | | TOTAL VALUE | P8,203 |
| <u>Donations Planned for 1983/84</u> | | | |
| white peas | 2000 | Canada | 692 |
| maize meal | 2400 | EEC | 484 |
| corn-soya-milk | 12066 | WFP(324) | total estimated |
| sorghum | 4320 | WFP(324) | local cost = |
| vegetable oil | 2049 | WFP(324) | 15,380 |
| cowpeas | 1512 | WFP(324) | |
| | | TOTAL VALUE | P16,556 |

* These estimates do not include sorghum used in the 1982/83 hand stamping programme. In addition, P1.4 million worth of local contracts were extended to cover gaps in international donations and provide milling services.

Source: Food Resources Department, The Human Relief Programme Progress Report, 12 January 1983.

TABLE 3.4

ESTIMATED TOTAL COSTS FOR THE 1983/1984 RELIEF CAMPAIGN (IN 1000
FULA)

| | |
|---|---------------|
| Human Relief ¹ | 10,054 |
| International Food Donations ² | 16,556 |
| Agricultural Relief ³ | 3,755 |
| Water Relief ⁴ | 1,500 |
| TOTAL = | <u>31,865</u> |

- 1 - Human Relief includes local expenditures on food, the remote area dweller fund, the expenses of the Food Resources Department staff, funds for ration clerks, equipment and depot space, trailers for mobile clinics, hand stamping sorghum, labor based relief projects and hire of transport.
- 2 - 1983/84 International Food Donations include a shipment of white peas from Canada, maize from the EEC and shipments of corn-soya-milk, sorghum, vegetable oil, and cowpeas under the WFP extension of the WFP 324 project.
- 3 - Agricultural Relief includes funds for the purchase and transport of cattle feed and hay, botulism vaccine, corral labor tarpaulins, the cattle purchase scheme, seed purchase, the destumping scheme and the drought power scheme.
- 4 - Water Relief includes funds for the agriculture and water committee and the cost of equipping emergency boreholes.

Source: Food Resources Department and the Ministry of Finance and Development Planning, 1983.

TABLE 3.5

FUNDING REQUIREMENTS FOR THE 1983/84 DROUGHT RELIEF PROGRAMME **

| <u>Human Relief</u> | <u>Relief Requirements</u> ('000 Pula) |
|---|--|
| Food * | 1000 |
| Remote Area Dweller Funds | 450 |
| Food Resources Department Staff and Drivers | 220 |
| Ration Clerks | 88 |
| Equipment and Depot Space | 61 |
| Trailors for Mobile Clinics | 60 |
| Handstamping Sorghum | 1350 |
| Labor-based Relief Projects | 6000 |
| Transport Hire | 825 |
| Sub-total | 10054 |
| | |
| <u>Agricultural Relief</u> | |
| Purchase Cattle Feed | 200 |
| Purchase Hay | 300 |
| Botulism Vaccine | 105 |
| Casual Labor | 50 |
| Transport Cattle Feed | 250 |
| Tarpaulins | 10 |
| Cattle Purchase Scheme | 500 |
| Destumping Scheme | 840 |
| Seed Purchase | 1000 |
| Drought Power Scheme | 500 |
| Sub-total | 3755 |
| | |
| <u>Water Relief</u> | |
| Agriculture and Water Committee | 500 |
| Borehole Equipping | 1000 |
| Sub-total | 1500 |
| TOTAL RESOURCES REQUIRED | 15,309 |

*Does not include food donations for the vulnerable group feeding programme.

**Source: Ministry of Finance and Development Planning, June 1983.

Between June 1981 and January 1982, the plan was discussed by Central Government, sent to the districts for their approval and debated by cabinet. A series of negotiations were held between August and October of 1982 over the location of the department responsible for food relief and, in October of 1982, a meeting of the Permanent Secretaries of Local Government and Lands and Finance and Development Planning decided that it would remain in Local Government and Lands.

In February of 1982, after an early indication that drought was likely, government relief stocks were checked and it was determined that there was only enough in stock to last until August. In February, plans were drawn up for the use of the Strategic Grain Reserve sorghum in the school feeding programme and a pilot hand-stamping programme was conducted in March and early April. On March 20th guidelines were issued to the districts to start feeding the Remote Area Dwellers, as these were the individuals most likely to be struck first by the drought. On April 1 the President declared that the country was suffering from a drought and that relief would begin May 1st, rather than June 1st as members of the Inter-Ministerial Drought Committee had advised. In the last week of April ration instructions were sent to the districts. The Food Resources Department was formed on May 1 and The Director of the Department began work two weeks later. Guidelines on relief dissemination for the destitutes were distributed in June and cables were sent to several districts that month exhorting them to begin their remote area dweller relief programme.

At the end of April, a group of Central Government representatives from the Food Resources Department, CTO, the MFDP and from the MLGL went on a tour of the northern districts and held drought-briefing meetings with Officials in Maun, and Francistown. In early May, a group of the officials from the Southern districts met in Gaborone to be briefed on the drought relief campaign. In late May, a group of officials from Central Government went to Francistown for another briefing on drought with officials from Central District. By mid-June, most of the feeding programs had begun, districts were beginning to compile their lists of destitutes and requests were issued to international donors for emergency food shipments.

By the end of May, no instructions had been sent to the districts on labor-based relief project specifications and funding ceilings for the projects. Some

districts used the Gooch-McDonald report as a guide for what projects were suitable, and in one district projects were started before funds had been authorized. In June and July, several districts sent in project memorandums which were screened through the Food Resources Department and then put into the queue at the Ministry of Finance and Development Planning. The average turn-around time for Finance's approval of the proposals was five weeks. Initially, a funding ceiling of 2.5 million was suggested and it was decided to let the districts propose as many projects as they could handle, under the assumption that they would be unable to absorb this much in project funds. By the end of July, projects had been approved for all but Southeast and Kgatlang. Both of these districts submitted proposals late, as they felt less severely affected by the drought. For most of the districts funds were provided to begin the labor-based relief projects by the end of August (FRD, 1983).

3.3 The Relief Programme: Feeding

Under the 1982/1983 relief campaign, all pre-school and primary school children, pregnant and lactating mothers, TB outpatients, remote area dwellers, destitutes and those working for extended periods on labor-based relief projects located more than 10 kilometers from their residence are entitled to supplementary food. The principal vulnerable groups, being the pre-school children, TB outpatients, pregnant and lactating mothers and destitutes receive their food ration from a health point. This unlike the procedures followed during the 1979/80 drought when food was disbursed through village feeding points with the assistance of volunteer workers. Presently, in accordance with the recommendations set forth in the Gooch-McDonald relief report, health workers and, in some areas, ration clerks, are charged with the responsibility of distributing food.

Feeding from the clinics is an outgrowth of the non-drought year, healthpoint, vulnerable group feeding programme. The major difference between the present programme and the non-drought programme is that the eligibility requirements are relaxed to include all normal weight for age children, and the destitute population. In addition, in April 1982, orders were distributed for the rations to be increased to drought ration levels. Approximately 500 calories worth of supplement are provided to each vulnerable group beneficiary from the health points in monthly allotments. The size and composition of the ration and an estimated number of beneficiaries is

provided in Table 3.6. An estimated total of 258,000 vulnerable group beneficiaries received food rations from the health points. For women and children, this would imply approximately an 80 to 85 percent coverage of all those eligible for the program.*

There are three major problems with the supplementary feeding programme. First, in many areas, food arrives late or not at all. In some areas this is due to difficulties in transport, but more often due to poor planning and management by food depot officials. Secondly, the Broadening of the eligibility requirement has engendered the massive inflow of beneficiaries to the health points. In studies of the health point attendance from Serowe, The regional Medical Officer has been able to demonstrate that health point attendance rises by between two and three hundred percent when food is available in a health facility and drops just as quickly when the food runs out. (Beattie, 1983) In many areas, the people appear to depend on the clinic for rations, and consider that the primary purpose of the health point is to provide free food. Many health points are faced with inadequate storage, over-worked staff and, on child welfare days, overcrowded health facilities. A third problem with the health point feeding program is that, in many areas, the feeding of destitutes is sorely neglected.

In Table 3.7 a regional breakdown of vulnerable group beneficiaries is provided. Firm estimates are not known for the destitutes, although approximately 20,500 of these individuals are supposed to be receiving relief. During the planning for the relief campaign, it was decided that there would be two types of destitutes, the ordinary (permanent) and the drought-induced destitutes. Ordinary destitutes were those people, such as invalids and the elderly, with no visible means of support who ordinarily received P8.50 per month. It was decided that those individuals would receive their monthly payment plus a drought ration and that the drought-induced destitutes would receive only a food ration. The districts were instructed to prepare lists of drought-induced destitutes which were to include individuals with no apparent

* Problems of estimating exact pregnant and lactating mother figures and for determining the number of five to ten year old children not attending primary school make precise coverage estimate difficult. In some cases, children receive rations from more than one health point. Accordingly there is a minor double-counting problem here and this would tend to bias the coverage estimate.

TABLE 3.6

FEEDING PROGRAMME BENEFICIARIES AND RATION ALLOTMENT

| <u>Group</u> | <u>Number of Beneficiaries</u> | <u>Ration (Daily)</u> |
|-----------------------------------|--------------------------------|--|
| Primary School Children | 190,500 | 100 gms sorghum flour 60 gms cowpeas 15 gms vegetable oil 10 gms dry skim milk |
| Vulnerable Groups | | |
| a) Pre-school Children | 175,000 | 200 gms corn-soya-milk 25 gms vegetable oil (or the equivalent in maize meal mixed with skim milk) |
| b) Pregnant and lactating Mothers | 56,800 | " |
| c) TB out-patients | 6,000 | " |
| d) Destitutes | 20,500 | " |

Source: Ministry of Finance and Development Planning, The Drought Situation in Botswana, 1983 May 1983.

TABLE 3.7

VULNERABLE GROUP BENEFICIARIES OF RELIEF FEEDING CAMPAIGNS BY
RELIEF DEPOT AREA, 1982 *

| <u>Depot</u> | <u>Primary School Children</u> | <u>Pre-School Children¹</u> | <u>Mothers²</u> | <u>TB Out Patient</u> | <u>Total³</u> |
|---------------|--------------------------------|--|----------------------------|-----------------------|--------------------------|
| Francistown | 15,563 | 14,313 | 8,156 | 421 | 38,453 |
| Ghanzi | 3,058 | 1,387 | 586 | 160 | 5,191 |
| Hukuntsi | 2,054 | 1,350 | 1,216 | 93 | 4,713 |
| Kanye | 1,873 | 2,010 | 1,157 | 83 | 5,128 |
| Letlhakane | 4,394 | 3,463 | 1,864 | 125 | 9,846 |
| Lobatse | 3,456 | 3,333 | 1,198 | 335 | 8,322 |
| Mahalapye | 18,017 | 19,661 | 4,963 | 463 | 43,104 |
| Maun | 12,105 | 23,208 | 7,438 | 752 | 43,503 |
| Mochudi | 10,755 | 7,791 | 1,559 | 306 | 20,411 |
| Molepolole | 22,463 | 12,165 | 4,640 | 398 | 39,666 |
| Palapye | 11,032 | 7,363 | 1,896 | 258 | 20,649 |
| Sebele | 15,463 | 17,833 | 5,309 | 637 | 39,242 |
| Selebi-Pikwe | 13,625 | 8,599 | 3,905 | 292 | 26,426 |
| Serowe | 10,130 | 3,136 | 1,755 | 109 | 15,130 |
| Tshabong | 3,376 | 2,536 | 2,081 | 215 | 8,208 |
| Tutume | 17,194 | 17,038 | 7,995 | 198 | 42,425 |
| TOTALS | 190,496 | 174,722 | 56,708 | 5,454 | 427,380 |

1 - Includes all under five children brought to a health post plus those 5 to 10 year olds not attending primary schools.

2 - Includes all pregnant and lactating mothers.

3 - Does not include destitutes or remote area dwellers who receive food rations. Inclusion of these groups would raise the total by approximately 25,000.

* Source: Food Resources Department Reports, January 1983.

means of support and no immediate relative or other source of assistance. Instructions on registration were unclear, were done outside normal Social and Community Development Department channels and varying standards were applied around the nation. In many cases, the health points were unaware that they were obliged to feed the drought-induced destitutes and consequently an insufficient supply of food was provided to the health point.

A special feeding programme was implemented earlier on for the Remote Area Dwellers. Since March 1982, more than P280,000 has been dispursed to the seven districts containing remote area dwellers. In the Central District, an overcommitment of P140,000 was recorded in the quick-action RADO programme. In all but Kgatleng, these funds were used to buy foods locally and distribute them to the remote area dwellers. The programme has suffered from transport problems and difficulties in monitoring outlays but is reaching an estimated 1000 families.

Under relief feeding, school children are provided with a daily meal. Children are fed a meal of pounded sorghum with cowpeas, vegetable oil and dry skim milk. In Kgatleng, Ghanzi and the urban areas, the primary schools are provided with milled sorghum. In the other areas, the sorghum is pounded by women and these women are paid 80 thebe a bucket. It is estimated that the hard-stamping programme will have utilized approximately 8,000 tons of sorghum, provided part time jobs for 3200 women and will inject P90,000 per month into areas most affected by drought.

In addition, in Centra, Chobe, Ngamiland and Northeast Districts, P550,000 was disbursed for the cattle purchase scheme. Under this programme Chobe was allocated funds to purchase 50 cattle, Ngamiland 1175, Northeast 1000 and Central 2775. The cattle were to be purchased for P100 and a killing rate of one beast per hundred students was selected. A procurement schedule was sent to each district, although in Central this was not adhered to. In Chobe, cattle were not available for purchase and in Serowe commercial prices outbid relief efforts. In areas where this programme was tested, school officials received it with a great deal of enthusiasm.*

* This programme is technically a part of the agricultural relief package but is an important source of supplementary food. The programme is geared to buy cattle from poor farmers whose herds were in bad shape. In practice, however, purchases are generally made from whoever is willing to sell at what is often below a market price.

At the start of the 1982/1983 relief campaign, it was decided that urban dwellers, excepting primary school children, were not to be included in the drought relief programme. Upon reports that infant mortality rates in clinics in Selibe-Pikwe and Lobatse had risen dramatically in May and June of 1982, instructions were issued to institute vulnerable group drought-ration feeding in 12 peri-urban health points around the country. Because of mismanagement within the Francistown Health Department, drought relief efforts in that city's peri-urban areas did not begin until June of 1983.

3.4 The Relief Programme: Labor-Based Relief Projects

A major components of the 1982/83 relief effort was the provision of gainful employment to those able bodied workers in rural areas who were willing to work. A drought (subsistence) wage of P1.50 per day was paid to each worker and P2.00 was paid to each project supervisor. The projects were selected after consultation with the villagers and were directed towards the construction of rural infrastructure. In 1982/82, a total of approximately 2.5 million Pula was expended on the followin:

- 2500 kilometers of road improvement (debushing and widening)
- 520 traditional huts (as teachers, quarters, health posts, Tirelo Sechaba huts and VDC stores)
- 68 dams (construction and desilting)
- 19 Soil reclamation projects
- 17 wells
- 230 pit latrines
- 26 village clean-up projects (collecting litter and digging rubbish pits)
- 27 clearing projects (showgrounds, new school sites)
- 20 gardens (for VDC's and clinics)
- 23 kgotla improvement projects

Several brickmaking and airstrip projects were also approved.

The length of these projects ranged from a minimum of three weeks to a maximum of eight months and the districts were instructed to temporarily halt the projects during the end of the year to encourage the workers to participate in plowing. Jobs are frequently rotated amongst the participants and an estimated 30,000 workers have gained employment from the programme. While precise estimates are unknown, it is thought that approximately 80 percent of

those involved in the projects are women (FRD, 1983). In, 1983/84, the labor based relief programme will be expanded considerably as it is felt wiser to expand the relief-for-pay rather than the free food giveaway part of the human relief campaign. The estimated budget for the labor based relief projects in 1983/84 is 6 million Pula.

These projects suffered from very low productivity rates. Only a small fraction of those projects listed above were completed. Technical guidance in the design of the projects was generally unavailable, supervision was minimal, logistics problems (e.g. delivery of tools, supplied) hampered implementation of some projects and in all districts, the delivery of pay by the pay teams was often late. In addition, monitoring of the projects was lax and consequently, it is difficult to evaluate both the quality and the quantity of work completed. Furthermore, poor coordination between ministries (e.g. Roads and Food Resources) has meant that several projects are rendered useless immediately upon completion. For example, several roads were debushed, but cannot be graded by the Roads Department for vehicular use.

3.5 The Relief Programme; Agriculture and Water

There is a technical sub-committee of the Inter-Ministerial Drought Committee that meets to discuss and select appropriate agriculture and water relief projects. This committee, called the Agriculture and Water Committee is comprised of the Permanent Secretaries of the Ministeries of Agriculture and Mineral and Water Resources plus other members of those two Ministeries. This committee met only twice in the course of the 1982/1983 relief campaign but produced an agenda of relief projects.*

In total, the relief components of the 1982/83 agricultural budget cost approximately 1.5 million Pula. This included the sale of stockfeed at cost from livestock feed centers, the provision of free emergency vaccines, seed and tillage subsidies, the cattle purchase scheme and certain water projects. The

* The cattle purchase scheme is technically under the Agricultural relief portfolio but was planned and managed by the Food Resources Department. It is difficult to differentiate those agricultural projects for relief purposes from those that are in the normal development programme, such as the provision of vaccines and sale of stockfeed. Many of the agricultural and water relief projects are 'scaled-up' versions of the normal development projects.

TABLE 3.8

AGRICULTURAL RELIEF EXPENDITURES 1982/83

| <u>District</u> | <u>Expenditure</u> |
|-----------------|--------------------|
| Molepolole | 35,000 |
| Maun | 51,000 |
| Mochudi | 27,050 |
| Serowe | 115,340 |
| Tsabong | 10,000 |
| Ghanzi | 10,265 |
| Kanye | 40,000 |
| Northeast | 10,120 |

Departmental Allocation

| | |
|--------------------------------|---------|
| Water Affairs ² (1) | 13,770 |
| Veterinary Services | 1,771 |
| Central Transport | 22,000 |
| Water Affairs ³ (2) | 100,000 |

Total = 436,316

Cattle Purchase Scheme

| <u>District</u> | |
|-----------------|---------|
| Maun | 117,500 |
| Serowe | 277,500 |
| Northeast | 100,000 |
| Chobe | 5,000 |

Total = 495,500

- 1 - Expenditures for all forms of district agricultural relief, mainly including seed purchases and funds for tillage.
- 2 - Water affairs expenditure for restoring existing water facilities.
- 3 - Water affairs expenditure for emergency drilling and equipping of boreholes.

* Source: Ministry of Agriculture, 1983.

water relief projects included the drilling of emergency boreholes, repair of existing borehole sites and the provision of water bowsers to dry areas. By April of 1983, the shortage of water in Gaborone became so serious that all groundwater drilling operations of the Water Resources Department were directed in and around the nation's capital. A breakdown of the agricultural relief expenditures of 1982/1983 is provided in Table 3.8.

Nearly half of the agricultural and water relief projects funds were channeled through the veterinary and extension services channels of the agricultural department. Regional and district extension and livestock officers were granted a great deal of discretion in the targeting of those funds within their region.

In 1983/84, the agriculture and water relief component of the relief programme will be expanded considerably and will cost 5.3 million Pula. This will include the provision of 20 kilograms of free seed to every farming household, the granting of between 25 and 40 Pula per hectare to farmers who destump their land, the provision of cattle feed at cost, provision of botulism vaccines in Bobirwa and the sandvelt, a drought power assistance scheme and the cattle purchase scheme. Of these funds, 1.5 million Pula is targeted for water relief which will be used to provide district councils with funds for water bowsers/bags, tanks, tractors, pumps, engines and spare parts. In addition, emergency drilling of 20 successful boreholes, four each in Kweneng, Kgatleng, Southern, Central and Northeast Districts, will take place.

3.6 Preparations for the 1983/84 Campaign

Advance planning for the 1983/84 relief campaign was far better than for the previous year's, benefiting of course from the continuity that a second consecutive year of drought brings. A cabinet memo was prepared and discussed in early April to define the range of relief activities and submit initial funding requests.* The President declared a second year of drought in early April and, in his speech on the continuation of the drought relief programme declared that these measures would continue through June of 1984. In his speech, the President urged the population to obtain quotas to sell their cattle, so that they are not left after the drought with no cattle or money.

* Apparently, certain relief measures discussed and agreed upon by the Cabinet, such as the clearing of noxious weeds and the application of kraal manure to fields, will not be implemented in the early part of the 1983/84 relief campaign.

He provided a discussion of all the major relief programmes, urged the population not to become dependent on the government for relief, stated that the government can only provide partial relief and urged the population to try and help themselves and each other.

On the 20th of May, 1983, a meeting of the District Commissioners was held in Gaborone to brief them on the plans for the 1983/84 drought campaign. During the meeting, the District Commissioners were briefed on the role of the District Commissioners in the Drought Programme, on the Labor Based Relief Projects, the Destitutes Programme, the Remote Area Dwellers Programme, the various Food Distribution programs and the Agricultural Relief Programme. The Commissioners were informed that the Central Government would provide them with Drought Coordinators, technical assistance for the Labor-Based Relief Projects and that other Ministries would be encouraged to provide major support to the district relief effort. New procedures for monitoring the flow of funds and for monitoring and evaluating the overall relief campaign were presented. Also, the districts were informed that mobile trailers would be tested as a means of bringing food to dwellers dependent on mobile health stops for their health services and that clinics that were congested (due to an overload because of feeding) could transfer part of their feeding responsibilities to a village feeding point. The district Commissioners were also instructed to reassess their lists of destitutes and bring them up to completion. This meeting was held after being postponed several times. A briefing meeting for District Drought Coordinators was also planned, but as of June 15th, had not been held.

In addition, information on relief programmes was also disseminated to the districts through the Parliamentarians. Briefing papers were prepared for the cabinet and the MP's were requested to spread this information throughout their constituency. During the 1982/83 campaign, this was the main mode of dissemination of information on drought relief activities to the general public. It was complained, however, in the DC's meeting of 20 May 1983 that the MP's are occasionally a source of mis-information and have even presented their opposition to certain relief programmes to their constituents.

By mid-June of 1983, only two districts had submitted labor-based relief project proposals although, under optimal circumstances, these projects should have commenced in June. Forward planning for food requirements insured that supplies would be adequate through June of 1984, given unchanged ration sizes

and beneficiary numbers. Following a bureaucratic norm, the District Commissioners were rotated in June of 1983 and this led many of the District Drought Committees to defer their planning of relief activities until the new District Commissioner arrived at his post. Generally, planning for relief activities, both in the districts and in Gaborone, appeared to be far less crisis-prone and uncertain than a year earlier.

3.7 The Targeting Issue

One of the principal characteristics of the 1982/1983 relief campaign was the delivery of relief goods and services to as many disadvantaged people as possible. Little attention was given to targeting relief to particular groups or regions of the country.* In some cases, this may have led to a lack of special attention being directed to the most needy and vulnerable to the effects of the drought.

For example, in the clinics and health posts the mothers are given a take-home pack of relief food. It appears that this food is taken home, mixed in the family pot and distributed as usual amongst the family members. Throughout the nation, there is very little direct-feeding of malnourished children in the health points — in the best of areas it appears that this is conducted once a week. Consequently, there is no safeguard built into the relief system to see that malnourished children get more relief food now than they did before the drought, although they are amongst the 'most vulnerable of the vulnerable.'

Similar arguments relating to poor targeting, and poor coverage, of food to remote area dwellers, peri-urban dwellers the problem is one of slow governmental recognition of their special plight and for the destitutes the problem lies with faulty registration procedures. In many cases, the need to concentrate resources on keeping the overall relief programme running has meant that these special 'most vulnerable' groups do not get the attention they deserve.

The question of regional targeting is also quite important. In Table 3-9,

* In part this was a 'political' decision since 1984 is the election year in Botswana and the targeting of aid to particular regions or groups might be seen as a form of political favoritism. This issue will not be discussed further. Suffice it to say, however, the vast majority of the Botswana civil servants appear to place their priority for effective relief delivery well above their political leanings.

TABLE 3.9REGIONAL COMPARISON OF NUTRITIONAL VULNERABILITY, 1981, EARLY
1982 AND EARLY 1983¹

| <u>Health Region</u> | <u>% At Risk</u> | | | <u>Total Children Feb.-March 1983</u> |
|----------------------|----------------------------|----------------------------|----------------------------|---|
| | <u>Feb.-March 1981</u> | <u>Feb.-March 1982</u> | <u>Feb.-March 1983</u> | |
| Maun | 28 | 32 | 25 | 2250 |
| Francistown | 26 | 31 | 34 | 5445 |
| Serowe | 26 | 28 | 30 | 7807 |
| Selibe-Phikwe | 21 | 21 | 27 | 7954 |
| Molepolole | 32 | 29 | 37 | 3125 |
| Lobatse | 31 | 31 | 29 | 11260 |
| Ghanzi | 37 | 38 | 36 | 525 |
| Mahalapye | 26 | 27 | 31 | 11514 |
| Gaborone | 28 | 29 | 29 | 7226 |
| Chobe | 28 | 18 | 29 | 713 |
| Kgalagadi | 35 | 32 | 35 | 2937 |
| Tutume | - | - | 33 | 4768 |
| NATIONAL TOTAL | 28 | 28 | 31 | 65,524 ² |

- 1 - The at-risk percentages represented are a simple average of the monthly at-risk figures for each of the periods listed. At-risk is defined as the percentage of those under-5 year old children whose weight for age is below eighty percent of the Harvard Growth Standard. The total children figure is the number of under-5's whose weight for age estimate is included in the nutrition surveillance system.
- 2 - This figure underestimates total under-5 beneficiaries of relief feeding because of problems in the Nutritional Surveillance Reporting System.

Source: Ministry of Health, Nutritional Surveillance Reports, 1981, 1982 and 1983.

we have presented the figures for under nutrition prevalence by health region. In early 1982, Ghanzi, Kgalagadi and Maun exhibited the highest rates of undernutrition, indicative both of the general poverty of the north and west and the severity of the drought in that area. In early 1983, the risk figures in Mahalapye, Molepolole, Tutume and Francistown exhibited a sharp increase, indicating the southern spread of the effects of the drought. Undernutrition risk figures remained high in Ghanzi and Kgalagadi but declined in Maun.

The primary source of discretionary relief funds are the labor based relief projects. In Table 3.10, district breakdowns are given on expenditures for the 1982/83 campaign and projected expenditures for the 1983/84 relief year. In 1982/1983, Ghanzi received roughly one-quarter as much money as did Kweneng in labor relief funds. The disparity here is primarily due to over-spending on the part of Kweneng, but this should still underscore the disparity in the regional allocation.* In 1983/84, Kgalagadi, Ghanzi, Northeast and Central are slated to received the highest allocations for labor-based relief projects. While this is more in line with the nutritional measures of drought-severity, no effort is being made to target resources within the districts to particular depressed areas. In fact, every village is encouraged to plan and implement a labor based relief project.

On the agricultural side, relief disbursement† appears to be more in line with regional needs. In Table 3.11, figures on distribution of stockfeed by agricultural district are presented in Table 3.12 provides a breakdown on cattle offtake, percent death loss and herd size by the various districts. The highest death rates (taken as one proxy for drought severity and shortage of grazing land) were recorded in East and West Ngamiland, Ghanzi, Kalagadi, Tutume and Mmadinare. Relative to the herd sizes in these areas, the greatest amount of stockfeed was directed to these areas.

However, the problem of targeting of agricultural relief does not appear to be one of region but is, instead, one of social group.

* In Central, the largest administrative district, Tutume received more labor-based relief funds than did all the other sub-districts combined. While Tutume is a poor sub-district, it is certainly no poorer than Molepolole or Francistown, as judged by undernutrition prevalences. The reason for the concentration of labor-based relief resources in Tutume appears to be due to the fact that drought officer there got his requests in first/on-time and that these were funded very early before the relief ceilings were known. Nonetheless, this also underscores the need for better fiscal planning along with regional targeting.

TABLE 3.10

LABOUR-BASED RELIEF PROJECT ALLOCATION FOR 1982/1983 AND 1983/1984 *

| <u>District</u> | <u>Funds Allocated 1982/1983</u> | <u>Rural¹ Per-Capita Allocation 1982/1983</u> | <u>Projected Rural Per- Capital Al- location 1983/1984</u> |
|-----------------|--------------------------------------|--|--|
| Kgalagadi | (P) 110,635 | (P) 5.55 | 4.0 |
| Kweneng | 582,550 | 5.03 | 3.0 |
| Northeast | 180,280 | 4.87 | 4.0 |
| Chobe | 34,797 | 4.38 | 3.0 |
| Central | 1,112,017 | 3.50 | 4.0 |
| Ngamiland | 206,316 | 3.03 | 3.0 |
| SouthEast | 42,499 | 1.39 | 3.0 |
| Ghanzi | 25,947 | 1.32 | 4.0 |
| Southern | 115,452 | .99 | 3.0 |
| Kgatleng | 381,940 | .91 | 3.0 |

1 - Average allocation per rural inhabitant, not per participant

* Source: Food Resources Department and Ministry of Finance and Development Planning, June 1983.

TABLE 3.11

1982 AGRICULTURAL RELIEF DISBURSEMENT

| <u>Livestock Station</u> | <u>Receipts of Stockfeed¹</u> |
|--------------------------|--|
| Ghanzi | 1331 |
| Selibe-Pikwe | 3031 |
| Francistown | 3825 |
| Palapye | 460 |
| Mahalapye | 783 |
| Kanye | 285 |
| Maun | 591 |
| Serowe | 828 |
| Bobonong | 2754 |
| Tsabong | 780 |
| Letlhakane | 396 |
| Gaborone | 702 |
| | <hr/> |
| Total | 15,488 bags |

1 - Of this total, 265 bags in Selibe-Pikwe, 133 bags in Kanye and 91 bags in Serowe remained unsold.

Source: Ministry of Agriculture, 1983.

TABLE 3.12

TOTAL CATTLE, PERCENT OFFTAKE AND DEATH RATE BY DISTRICT, 1982*

| Districts/Regions | Total Cattle (1000 head) | % of Total | % Death Loss ¹ | % Offtake ² |
|---------------------------|-----------------------------|-------------|---------------------------|------------------------|
| Traditional | | | | |
| Barolong | 29.1 | 1.0 | 16.2 | 24 |
| Ngwaketse South | 77.9 | 2.6 | 15.0 | 23 |
| Ngwaketse North | 257.0 | 8.6 | 14.0 | 21 |
| Southern Region | 364.0 | 17.8 | 14.4 | 22 |
| Bamalete | 49.4 | 1.7 | 18.0 | 28 |
| Kweneng South | 131.6 | 4.4 | 17.0 | 25 |
| Kweneng North | 60.6 | 2.1 | 12.5 | 19 |
| Kgatlang | 144.4 | 4.8 | 16.0 | 25 |
| Gaborone Region | 386.0 | 13.0 | 16.1 | 24 |
| Mahalapye | 305.1 | 10.2 | 17.7 | 29 |
| Palapye | 183.9 | 6.2 | 16.5 | 27 |
| Serowe | 255.3 | 8.6 | 17.1 | 25 |
| Mmadinare | 233.7 | 7.8 | 18.1 | 27 |
| Central Region | 978.0 | 32.8 | 17.4 | 27 |
| Tati | 135.0 | 4.5 | 17.0 | 33 |
| Tutume | 165.0 | 5.6 | 18.6 | 30 |
| Francistown Region | 300.0 | 10.1 | 17.9 | 32 |
| Ngamiland West | 188.7 | 6.3 | 21.0 | 28 |
| Ngamiland East | 148.8 | 5.0 | 18.0 | 24 |
| Chobe | 7.5 | .3 | 10.7 | 15 |
| Maun Region | 345.0 | 11.6 | 19.5 | 26 |
| Ghanzi | 54.3 | 1.8 | 10.4 | 22 |
| Kgalagadi | 76.7 | 2.6 | 18.0 | 28 |
| Western Region | 131.0 | 4.4 | 15.0 | 25 |
| Total Traditional | 2504 | 84.1 | 17.0 | 26 |
| Total Commercial | 475 | 15.9 | 5.9 | 40 |
| TOTAL | 2979 | 100 | 15.2 | 28 |

1 - % Death loss is equal to the number of cattle reported to die divided by the total number of cattle.

2 - % Offtake equals the sum of the number of cattle that died, were sold or slaughtered for home consumption divided by the total number of cattle.

* Source: Ministry of Agriculture, 1982 Agricultural Census, Preliminary Results.

As shown in Table 2.3, death rates amongst small cattle holders was twice as high as the death rate amongst the larger and the commercial holders in 1982. Those with less than 10 head would have difficulty finding the means to purchase the subsidized government feed (due to the failure of their crop) and would be hard-pressed to be able to afford the costs of obtaining and transporting the feed from the government livestock center to their farms.

3.8 Other Areas of Concern

Problems of poor information management are often related to problems in the organization of an operation. This is as true for a relief campaign as it would be for a shop with no inventory control. There are certain concerns that arise from what can be termed the 'structure' of the relief effort, in addition to the targeting issue, that effect the need for information in relief management.

Anecdotal evidence in many areas indicated that many of the beneficiaries of the relief effort are becoming dependent on the government for the provision of food and jobs. In particular, self-help efforts of the villagers are said to have come to a near stand-still. Equally deleterious is the admission by many health center workers that they are neglecting other primary health care obligations in order to dispense (or supervise the dispensing) of relief food. As drought continues for a second year and as the relief programme expands and becomes more institutionalized, there is the danger that large segments of the population will become overly dependent on government assistance. Hard evidence is lacking about the extent of psychosocial and economic dependence on relief at present. A proposal for further investigation of the phenomena is provided in Appendix III. It is found that the population is highly dependent on the relief, then a reduction in the number of recipients, as soon as possible, may be the most judicious means of promoting long-term self-sufficiency in development efforts.

Related to the dependency issue is the concern that, for some, relief may not be so badly needed and that they may be using the relief resources to meet non-essential desires. An inquiry into the end-use of food assistance and the wages from the labor based relief projects should be conducted to determine if these resources can be better utilized. Suggestions for the organization of this investigation are also included in Appendix III.

In many areas, logistics difficulties appear to hamper the continuous and timely disbursement of food relief. At present, a significant share of the

problem seems to rest with the depot staff. These officials are under the supervision and bureaucratic control of the Supplies Department of MFDP while in-country food relief planning is conducted by the Food Resources Department. To improve the logistics of food delivery it would be advantageous to second the depot supplies staff to the Food Resources Department for the duration of the drought. In order to identify areas where logistics bottlenecks are the most severe, it would be useful to examine the food accounting records of a sub-sample of schools and health points around the nation (e.g. when food arrived, how much and when it was depleted).

It is also important to give thought to the bureaucratic organization of relief dissemination in Central Government. One of the principal recommendations of the Gooch-McDonald report was the transfer of the Institutional Feeding Programme portfolio to the MFDP so that a fresh start in a strong Ministry could be obtained. This has not happened. Instead the IFP was renamed Food Resources and new personnel and responsibilities added to the IFP staff and portfolio. The MFDP is still the logical Ministry to administer the feeding programme and the labor based relief projects. This is so because the MFDP has the strongest planning cadre, could secure rapid financing for relief projects, has the Supplies Department within its Ministry which would help alleviate many of the cross-Ministry food logistics problems and because they would be in the best position to integrate relief activities with overall development efforts. In addition, the transfer of the Food Resources portfolio to the MFDP would add a ministerial focus to the activity of the Inter-Ministerial Drought Committee. At this time, it appears that gains in the efficiency of relief distribution would outweigh the initial organizational confusion that would result from such a change.

In the near term, there is a need for a technical manual on how to plan, implement, monitor and evaluate drought relief programmes for the district drought committees. Many of the committees are operating on the basis of a reading of the Gooch-McDonald report, circulars from Gaborone and a measure of common sense. The provision of one clear reference document should greatly reduce the level of uncertainty about relief activities in the districts. This would also be a cost-effective means of improving the flow of relief goods and services since one of the consequences of district-level uncertainty about relief procedures is hesitation and the consequent delay in relief implementation.

There is also a need for a long-term contingency plan on drought relief to

be prepared as a guide for future efforts by the Central Government. Many of the relief activities that are now planned are based on the assumption/hope that the drought will end next year. If this does not happen then another set of plans will have to be drawn. The cost and the scope of the 1983/84 relief plans is so large that, if international support was not so forthcoming, major changes would have to be made. The Gooch-McDonald report provided a plan for the early stages/years of drought relief. It would be wise for the Central Government to consider the costs and benefits of alternative relief packages, under various budget constraints, for a multi-year continuation of the drought. The preparation of the long-term contingency plan should be the responsibility of the Inter-Ministerial Drought Committee as this group has the most experience with relief efforts and is in a position to compare the needs for relief with the needs for other sorts of development programmes.

IV. COMMUNICATION AND DROUGHT MANAGEMENT

The clear transmission and reception of information required for the orderly management of drought relief activities appears to be the exception rather than the rule in the current relief effort. At all levels of relief management, decisions are made far more often on the basis of hearsay and reflex rather than as a result of a careful examination of existing data resources. This can be explained, in part, by the need for rapid decision making in an emergency situation. It is equally true however, that all levels of the nation's drought management apparatus, a number of obstacles exist which serve to disturb the flow of appropriate information to the responsible decision makers. Overcoming these communication bottlenecks is a necessary first-step in the improvement of the overall drought management process.

4.1 Identifying Users of Relief Management Information

The identification of information users and their particular data needs is a prerequisite to the improvement of the relief management communication process. Data produced for a vaguely defined 'public good' frequently is of little utility to those who require information at a particular time for a particular purpose. In Botswana, the relatively clear delegation of drought relief responsibilities is an aid in the identification of information users.

At the national level, the initial responsibility for the formulation of drought relief measures rests with the Inter-Ministerial Drought Committee. This Committee is comprised of representatives from the Ministries of Finance and Development Planning, Local Government and Lands, Health, Agriculture, the Meteorology Department and the Department of Water Affairs. The Committee is chaired by the Rural Development Planner from the Ministry of Finance and Development Planning and the Agricultural Finance Officer from the same Ministry doubles as the committee secretary. To plan the relief effort, this committee requires information on the status of agricultural and livestock conditions, the probable severity of the drought in various regions of the country, the estimated number of beneficiaries of various relief schemes, the availability of relief resources and the likely costs and benefits attached to each relief effort. During the course of implementation, this Committee must monitor changing agricultural, livestock and human welfare conditions throughout the nation. In addition, they must monitor the dissemination of

relief and evaluate the impact of that assistance.

There are, at the national level again, three line agencies with major executory responsibilities for the delivery of relief aid. These are 1) the Ministry of health, 2) the Ministry of Agriculture and 3) the Food Resources Department within the Ministry of Local Government and Lands. These three groups are responsible for the effective delivery of relief goods and services to the needy population. The food Resources Department, in particular, is responsible for the supervision of the Labor Based Relief Projects and for the Logistics of Food Relief, two of the major components of the human relief effort. To operate these programs, the Food Resources Department must be constantly in a position to evaluate the food and employment needs of the different regions of the country.

The counterpart to the Inter-Ministerial Drought Committee (IMDC) at the next lower administrative level is the District Drought Committee. Each District, and in the case of Central District, each sub-District, has a drought Committee which is chaired by the District Commissioner. Generally in those districts where a Development Officer (DOD) is available, he assumes the duties of secretary of the drought committee, otherwise it is customary for another Council employee to fill that role. At the District level, the drought committee mirrors that of the IMDC with representatives from Agriculture, Health, Local Government and Lands and the Food Depot playing the primary role in planning and implementation. The Drought Committees tend to vary by District. Some meet practically every month with representatives from all line agencies and local government groups attending, while others meet sporadically with smaller groups. At each District Drought Committee meeting the line agencies are requested to report on their area of expertise and responsibility. For example, the Regional Medical Officer or the Regional Health and Nutrition Officer would report on the nutrition status in the district and problems in securing an adequate supply of food at any of the health points; the Agricultural Officer would report on crop and livestock conditions; the Water Resources representative would comment on the availability of groundwater supplies and the prospects for opening new boreholes and so on. In addition, reports would be presented on the status of the various relief projects, problems identified and a set of action items drafted for future consideration. A copy of these minutes is posted to the Inter-Ministerial Drought Committee which uses them in preparation for their own meetings.

The Districts are charged with the responsibility of identifying projects to be included within the Labor based Relief Projects and to execute the feeding and agricultural relief programmes as directed by the IMDC. District officials must be kept abreast of human welfare, agricultural and livestock conditions within their district in order to plan the LBRP's, as well as to be able to use their more discretionary emergency relief funds to target relief to particular areas. The District Officials must be aware of problems in the implementation of relief activities and are empowered to correct those difficulties. These officials act as the primary conduit of information to the IMDC and are, of course, the recipient of IMDC directives.

At both the national and the district levels there is a need for two types of information. The first is that which describes the prevailing level of human welfare, agricultural conditions and condition of livestock. This information is required to plan the relief campaigns, to monitor the effectiveness of the relief efforts and to be used to redirect resources during the course and the relief campaign. The second type of information is that which relates to the internal management of the relief projects themselves. This would include the financial accounting of relief dissemination, the identification of problems that arise during the course of the relief distribution, the status of the various projects, the estimated beneficiary population and the procedures for delegation of duties within the districts. Most important in this later category are the circulars provided by the Central Government to the districts which provide instructions and guidance for the organization of the relief effort and the reporting requirements of those distributing the relief.

Deficiencies in the second category of information, that relating to internal drought management, are drawn quickly into the limelight during the course of relief implementation. Funds are expended without proper accounting, overruns occur, food deliveries arrive late, certain categories of beneficiaries seem not to receive aid and project evaluations are so qualitative and general as to be rendered useless. The short-term requirement of improving the efficiency of relief delivery dictates that these issues command the bulk of the attention of the various drought committees. In addition, most of the mechanisms for reporting the internal project problems are informal and must be revised as new difficulties arise. In an attempt to 'formalize' the internal management of the relief effort, the Food Resources Department has recently issued a relief project evaluation pro-forma to be completed by the

districts on a bi-monthly basis.

The first form of information, that concerned with monitoring human welfare, agriculture and livestock, is a traditional responsibility of the government line agencies and continues during non-drought as well as drought periods. This information is used for a wide range of activities in addition to drought relief management. Because of the collection and dissemination of this information is a routine government responsibility with a clear delegation of authority, there is a tendency to overlook inadequacies and deficiencies in its delivery. This is particularly significant in the case of drought relief management where officials at all levels tend to assess the human, agricultural and livestock conditions in their respective domain on the basis of a fairly meager amount of quantitative information and a large measure of hearsay, popular opinion and direct observation. Were the same information requirements applied at the financial management of relief distribution as they are to assessing, for example, the livestock situation in a particular district, there is no doubt that the relief programme would head towards financial havoc. There are a number of factors that inhibit the flow of the routine line agency data to drought relief decision makers.

4.2 Bottlenecks in Information Flow

Ultimately, the problems in the communication of relevant information from the line agencies to those involved in drought management stem from the lack of practically any communication between those who produce and those who might potentially consume that data. In one ministry an economist claimed that his data was produced for "the general public"; in another a statistician stated that his data was to be used by the larger scientific community. Amongst those who produce the government line data, it is customary to consider that the obligation of the researcher ends with the publication of the research results. Economists, statisticians and others in charge of the generation of the government's statistics seldom solicit any feedback on their materials, and

certainly not outside of the confines of their own department. Nor would this be very rational behavior on their part, given the parochialism that appears to pervade the various departments*

Each central government department has its own hierarchy of people in the field and naturally, those posted in the field report on conditions germane to their area of expertise. While the Central Statistics Office is responsible for most of the annual or long-period data collection and analysis, most of the day-to-day monitoring and reporting is conducted by the line agencies. Generally, information reported within agencies stays within the agency. Procedures for dissemination of information horizontally, at all government levels, are unclear. In District Drought Committee meetings, for example, various line departments which possess a wealth of information horizontally, at all government levels, are unclear. In district Drought Committee meetings, for example, various line departments which possess a wealth of information are represented, yet only a very broad summary is presented to the committee. This problem of departmental parochialism is complicated by the existence of different geographical domains for the different departments. The Ministry of Health operates on the basis of 11 health regions; the Agricultural Extension System (within the Ministry of Agriculture) operates on the basis of five regions and 17 districts, veterinary services (also within the Ministry of Agriculture) operates on the basis of six regions, the Meteorology dept reports on the basis of the eight main rain stations. Drought relief, however, is administered by the representatives of local government, chaired by District Commissioners in the nine political districts. None of these bureaucratic domains conforms geographically to any others. Each of these geographical domains contains a bureaucratic hierarchy that leads up to the central government. In the administration of drought activities it is often difficult for

* Many in central government are well aware that their publications are not used, or are produced too late for any practical use. Often they complain that there is a generation gap that inhibits the utilization of their material. The old administrators, they claim, don't understand, or wish to use data of any kind, and prefer to rely on more informal sources of information. This is, in part, true. However, all branches of central government and certainly all District Drought Committees have staff who are in the generation that appreciates the need for quantitative evidence and there are certainly also many at the top positions in Central and District government that share their view.

a District Commissioner to request services from a central government officer when that officer's duties cross district lines. Naturally, this geographic multiplicity renders the comparison of reports across departments a near impossibility, especially when information is provided on the district or region of a specific agency. This geographical bias is a major impediment to the flow of information across ministries, particularly at the lower levels of the government, yet it is unlikely that there is any means of overcoming this problem without a major reorganization of the bureaucratic hierarchies — a most unlikely prospect at this point in time.

Another problem that confounds the coordination of data resources across departments is the problem of data flowing to Gaborone without being interpreted in the districts. A certain 'central-pull' is exerted on the data produced in the districts by analysts in Gaborone because of their need to meet reporting and analysis deadlines. In the Health Department, for example, nutritional surveillance data is sent from the clinics and the health posts to the Regional Medical Officer (RMO) who then posts it on to the Central Statistics Office (CSO) in Gaborone. In many cases, the data is sent directly from the health stations to the CSO without any copy sent to the Regional Medical Officer. Frequently, because the RMO only receives a partial set of the surveillance reports, it is easier for him to wait the month and a half or so that it takes to receive a report back from Gaborone. By that time, it is often too late to diagnose the causes of a particular nutritional malady in the health station. The situation in the agricultural department is similar, with agricultural extension agent reports sent to the district agricultural offices for tabulation, although more often the agent's reports themselves are directly forwarded to Gaborone without any analysis at the district level. Often there is pressure exerted on the district or regional officials to get the field reports sent in on time. There is little or no pressure exerted on them to read or analyze those reports before they are sent in to Gaborone.

Many of the other problems in the cross-ministerial organization of data resources needed for drought relief management, such as untimely report publication, data left unanalyzed, criticism of data quality by ministries of other ministries etc., stem from the problems of minimal communication between data producers and users, bureaucratic parochialism in the information collecting and reporting apparatus and the central-pull exerted on data

resources by offices in Gaborone. These are difficult problems and will certainly take some time to resolve. In the meantime, it is heartening to note that these problems are recognized by many who serve in the Government of Botswana and that measures are presently being taken to overcome some of these problems. One means to assist in overcoming these problems is through the design and implementation of a Drought Early Warning and Monitoring System (EWMS).

4.3 An Early Warning and Monitoring System: Background

The need for a drought warning and monitoring system has been recognized by those working on the problems of relief management in Botswana for some time. For example, A.C. Campbell, commenting on the relief campaign of the early 1960's states that:

Although the signs of impending drought must have been evident, when it struck in 1960 the Administration was quite unprepared for it. By 1965 it had reached a peak yet still no proper measures had been taken to alleviate it. Consequently, by the time anything on a national basis was implemented and functioning, the drought was finished. (Campbell, 1979, p. 108)

Since becoming the executive agency for the World Food Programme (WFP), the Ministry of Local Government and Lands has been primarily responsible for the supervision of human relief while the Agricultural Ministry has been responsible for the provision of livestock and crop relief. On the drought relief campaign in 1973, Wily comments that:

..with rainfall failure in parts of Botswana during the summer of 1972-73, it was clear that neither ministry was adequately prepared to deal with drought situations, individually or cooperatively. Food aid to people, for example, did not actually reach them until September 1973, when a special Drought Relief Project was begun. (Wily, 1979, p. 211)

Following the drought in the early 1970's a series of inquiries were made by the Ministry of Agriculture, the Rural Development Unit of the Ministry of Finance and Development Planning and the inter-Ministerial Working Party on Drought into the mechanisms for planning drought relief purposes. One of the results of this was the call for an outside consultancy, by the Ministry of Agriculture, to assess drought relief planning measures. That consultancy was carried out by Stephen Sandford, between October and December of 1976, which resulted in the issuing and wide circulation of his report entitled Dealing with

Drought. One area stressed by Sandford was the need for the establishment of an information system to trigger semi-automatic responses to signs of drought. In his 1976 report, Sandford wrote, "A permanent monitoring system is required to give warning of impending drought and to identify the time and place at which serious shortages are occurring and where relief is necessary. (Sandford, 1976, p. 10).

In 1977, the Ministry of Local Government and Lands actively pursued a strategy of decentralization in the preparation of the Fifth National Development Plan (1979-1985) and with that the districts were instructed to prepare drought monitoring systems and procedures for implementing relief. By April of 1978, six of the nine districts had submitted drought relief plans to the Ministry of Local Government and Lands, and only five of those included plans for a drought warning and monitoring system. Northeast, Ghanzi, Dweneng, Central and Kgatleng included plans for drought monitoring within their drought relief contingency plans. While procedures varied across these districts, generally they were based on regular monthly reports from the Agriculture, Health and Meteorology departments with reports to be sent into Gaborone on a regular basis. Commenting on this system, Elizabeth Wily, in 1978, states,

Unsophisticated as it is, (those monitoring measures) it still has not been balanced at central level with the necessary policy decision on handling drought relief measures. Issues relating to the source and release of funds to districts, the degree of assistance (transport, storage, subsidies, seed, post-drought recovery, etc.) the centre will provide, and so on, have simply not yet been resolved. (Wily, 1979, p. 217)

In response to a request from the Permanent Secretary of the Ministry of Local Government and Lands, the Ministry of Health established a nutrition surveillance system in January of 1978. Under this system, the weight for age of children was used as the primary indicator of nutritional status and a series of reports were produced to show the at-risk figures for clinics throughout the country. The principle designer of that system, J. Kreysler, suggested, in 1978, that a variety of indicators be added to the nutritional surveillance system to provide it with a more holistic base upon which to diagnose and explain nutritional deficiency. Kreysler suggested incorporating a set of predictive indicators including a decline in rural food stocks, abnormal intra-rural and rural-urban migration, rainfall distribution, pasture pest and animal disease incidence, grazing and surface water availability, cash crop prices, input costs, input availabilities, ratio of cost of nutrition to minimum wage rates, ration of

cost of nutrition to informal sector earnings, and the levels of unemployment and employment. He suggested that different indicators be used depending on the dominant food supply system. (Kreysler, 1979) Perhaps because of the complexity of his suggestions and the considerable amount of additional resources required for its implementation, none of his suggestions for an integrated surveillance frame were adopted.

A second consultancy on drought relief measures for livestock was undertaken at the request of the Ministry of Agriculture by McGowan and Associates in 1979. These authors suggested that,

The first step in implementing drought relief measures is to recognise that a drought exists. A monitoring system which includes both subjective reports from district officials and objective rainfall analysis is likely to be more effective than a system relying on either of these sources alone. (McGowan & Associates, 1979, p. vii)

Although no formal monitoring system has been established by 1979, early rainfall and nutrition reports warned the government that serious food problems due to drought were imminent. While drought relief measures had been discussed as early as February of 1979, no specific guidelines or planning documents were available until September of 1980 with the publication of A Human Drought Relief Programme for Botswana by John McDonald and James Austin of the Ministry of Finance and development Planning. In this report, the authors provided a week-by-week guide for drought relief implementation. In order to determine the location and severity of the drought, the authors cite the need for a drought warning system. They suggest basing such a system on rainfall estimates, crop estimates, grazing conditions, human nutrition conditions and reports from various district relief administrators. In the appendix of their report, the authors provide a critique of the various forms of data available to be used in an early warning system and present a methodology for the analysis of the data. (McDonald and Austin, 1980)

Commenting on the 1979 relief programme, Toby Gooch and John McDonald wrote in June of 1981 that:

No mechanism for co-ordinating the information of the early warning system had been devised while the accuracy and reliability of many of the systems was unsatisfactory. ...No decision had been taken on exactly what constituted a drought, and when a relief programme should be initiated. Districts had been asked to submit regular reports as long ago as 1977 but few did and the little information received was largely subjective and of little use. (Gooch and McDonald, 1981)

During the course of the 1979 drought, a socio-economic investigation into the causes and consequences of the drought was conducted by Helga Verich and Christopher Shepard in the Kweneng and Southeast Districts. These authors found that the drought monitoring system then in use would accurately predict crop and livestock conditions but that it would only measure the effects of drought on people when signs of starvation would appear amongst large numbers of the population. In order to develop a system more sensitive to the problems of people during a drought, Sheppard suggested that village authorities be entrusted to identify those in need, rather than relying on the nutrition indicators to identify those requiring assistance. (Sheppard, 1979, p. iv)

The problems of over-reliance on the nutritional surveillance system to trigger the release of drought rations were amplified by Gooch and McDonald in their evaluation of the 1979/80 drought relief programme. Instead of suggesting further decentralization of relief identification responsibilities, Gooch and McDonald presented a two-stage warning system that would be used to monitor the drought condition and trigger release of relief. In the first stage, rainfall and crop prediction estimates would be computed and these would be compared to prespecified cutoff levels to determine if a drought was likely. If so, a series of stage two indicators, including crop potential, food stocks, livestock conditions, nutritional surveillance and health center attendance data, would be assessed. Gooch and McDonald identify eight stage two indicators which would be used to provide additional monitoring information once it appeared that a drought was likely. These are crop estimates and household food stocks, nutrition surveillance data, reports on the food situation of remote area dwellers, domestic water supplies, livestock conditions, applications for destitute relief, prices of basic foodstuffs and reports from village leaders and tribal authorities. In addition to these recommendations, Gooch and McDonald also suggested that a permanent Inter-Ministerial Drought Committee be established and be empowered to supervise a drought warning system.

The Gooch-McDonald report was presented to the Botswana cabinet and its recommendations accepted as a guide for drought relief planning in 1982. By January of 1982, the meteorology department reported that rains during the planting season appeared to be insufficient throughout most of the nation. The Inter-Ministerial Drought Committee then contacted selected districts to request information on crops and livestock and to call for meetings of district drought committees. By February, report to the Inter-Ministerial Drought

Committee from the Agriculture and Health Departments confirmed that drought conditions prevailed through much of the country but had not yet begun to seriously affect the nutritional levels of the young children. On April 1, the President declared that the nation was in a drought and ordered several relief measures to be taken. These were implemented fairly smoothly soon thereafter (see Section 2 on the 82/83 drought campaign). During the course of the 1982 drought relief campaign, reports were presented to the Inter-Ministerial Drought Committee from the Ministry of Agriculture, Ministry of Health, the Ministry of Mineral Resources and Water Affairs and the Department of Meteorology on the severity of the drought throughout the nation. The reports presented were fairly general in nature and appear to have had little effect on the targeting of relief distribution.

In districts, the case was much the same. The various line agencies were responsible to report to the District Drought Committees at committee meetings. This they did, but often in the most general of terms, making little use of the data routinely collected by their departments. Once again, the nutritional surveillance estimates reported by the Health Department were the chief source of 'hard data' for gauging drought conditions within and between districts.

4.4 Future Early Warning System Measures

There has been, dating back to pre-Independence days, an undeniable history of calls for an Early Warning and Drought Monitoring System followed by little in the way of actual implementation. This can be explained in part by those same factors, such as the lack of communication between data producers and users, bureaucratic parochialism and centrally-pulled data flow, which inhibit the use of much of the routine government data. Keeping Santayana's invective in mind — he who forgets the past is doomed to repeat it — there appears to be a constellation of factors at present which favor the near term implementation of an early-warning system.

There is the growing recognition that the costs of mounting the relief campaign are high; estimated domestic costs for the 1983 campaign are 14 million Pula, and that the costs of errors in targeting and relief planning rise accordingly. Furthermore, the prospect of drought lingering past 1983/1984 is certainly a possibility and, in that case, measures may have to be taken to more effectively target relief resources. Any programme of effective relief targetting will be contingent upon the availability of an information base (e.g.

monitoring and warning system) to guide those decisions.

Second, many of the components of what could form an early warning system have become well established and, as a result, are less clouded with uncertainty about what they report. The nutritional surveillance system, for example, has undergone two formal reviews during the past three years, both leading to improvement in the collection and analysis of the existing data. In a sense, the reporting systems of various departments have become better known to each other, including their respective faults, omissions and biases. This sense of familiarity is important in allowing for a common basis of discussion between the various ministries.

Another factor that certainly is a positive sign in favor of the development of a drought monitoring and warning system is the participation of Botswana in the SADCC early warning conferences. More will be said about this in a later section of the text, but, all signs indicate that the Ministry of Agriculture and the Department of Meteorology, in particular, have made a start at the implementation of certain SADCC agreements.

The essential objectives of an Early Warning and Monitoring system are the same today as in 1966. The aim of such a system is to provide information which can be used to help maintain the food security status of the nation. In the context of Botswana's drought prone environment, the primary responsibility of such a system would be to warn and monitor the presence and intensity of drought conditions in the rural areas of the nation.

For the next decade, it is essential that the early warning and monitoring system be designed to provide relevant and timely information to the departments that are administering and planning the drought relief programme. The more this system is used by those with drought relief management needs, the more responsive the different ministries will be to the need for improvements in the collections and reporting of their data. If the early warning information is of little use to those involved in relief management, then it is likely that little progress will be made in improving the quality of available data resources and that little progress will be made in improving drought monitoring procedures.

The keys to a successful Early Warning and Monitoring system for Botswana, at this stage, should be simplicity, timeliness and clarity. Simplicity is of the utmost importance here because this is a new system, and because any attempt to build too many indicators into the system can lead to complications

APRIL 1983 RAINFALL SUMMARY *

| | ACTUAL APR '83 | NORMAL APRIL | %DEP. FROM NORM APR '83 | SEASONAL TOTAL (JUL '82-APR '83) | SEASONAL NORM (JUL-APR) | %DEP. FROM NORM (JUL '82- APR '83) |
|-----------------------|-------------------|-----------------|----------------------------------|--|-------------------------------|--|
| GABORONE | 7,3 | 43,7 | -83 | 465,2 | 519,8 | -11 |
| <u>Southeast</u> | | | | | | |
| Kgale | 7,0 | 59,2 | -88 | 488,0 | 507,1 | -04 |
| Ramotswa | 8,5 | 65,8 | -87 | 335,1 | 498,1 | -33 |
| Tlokweng B/Gate | 17,1 | N/A | - | 447,5 | - | - |
| <u>Southern Dist.</u> | | | | | | |
| Jwaneng | 3,7 | N/A | - | 366,0 | - | - |
| Kanye | 9,8 | 40,3 | -76 | 422,6 | 507,3 | -17 |
| Lobatse | 13,0 | 48,6 | -73 | 324,2 | 541,2 | -40 |
| Phitshane Molopo | 3,0 | 60,2 | -95 | 255,5 | 467,6 | -45 |
| Pitshane | 5,0 | 66,2 | -92 | 449,6 | 495,3 | -09, |
| Ramatlabama | 15,0 | 64,3 | -77 | 313,3 | 513,4 | -39 |
| <u>Kweneng Dist.</u> | | | | | | |
| Molepolole | 0,0 | 44,2 | -100 | 320,1 | 495,8 | -35 |
| Thmaga | 0,0 | 56,9 | -100 | 269,6 | 450,8 | -40 |
| <u>kgatleng Dist.</u> | | | | | | |
| Mochudi | 0,0 | 38,6 | -100 | 396,3 | 475,6 | -17 |
| Olifants Drift | 9,1 | N/A | - | 126,1 | - | - |
| <u>Central Dist.</u> | | | | | | |
| Baines Drift | 28,5 | 19,1 | +49 | 183,3 | 344,5 | -47 |
| Bobonong | 58,0 | 20,4 | +184 | 192,7 | 325,2 | -41 |
| Dibete | 2,0 | 40,1 | -95 | 270,0 | 388,9 | -31 |
| Dukwe | 1,5 | N/A | - | 247,9 | - | - |
| Gweta | 22,5 | 39,2 | -42 | 281,5 | 462,7 | -39 |
| Kalamare | 5,5 | 30,2 | -82 | 343,5 | 422,6 | -19 |
| Machaneng | 19,0 | 30,8 | -38 | 362,0 | 405,0 | -11 |
| Mahalapye | 14,9 | 24,7 | -40 | 302,4 | 451,5 | -33 |
| Martins Drift | 25,0 | N/A | - | 417,8 | - | - |
| Nata | 0,8 | N/A | - | 281,1 | - | - |
| Orapa | 7,0 | N/A | - | 296,7 | - | - |
| Phalapye | 1,5 | 24,3 | -94 | 263,2 | 397,6 | -34 |
| Rakops | 5,2 | 31,6 | -84 | 247,2 | 279,7 | -35 |
| Sebiaa | 15,5 | 27,9 | -44 | 358,5 | 493,6 | -27 |
| Sdebi-Phikwe | 35,9 | N/A | - | 391,1 | - | - |
| Serowe | 10,3 | 55,3 | -59 | 341,2 | 455,0 | -25 |
| Tlume | 8,5 | 33,1 | -76 | 356,0 | 524,6 | 30 |

Source: Department of Meteorology, April Weather Report

in interpreting divergent signals and in calibrating multiple indicators. Timeliness is no less important. A report that comes in one month too late for a decision-maker is essentially a near useless report. Timeliness is a function of the needs of the user, not the data-producer, and those involved with the Early Warning System must be sensitive to this. The third pillar of an effective warning and monitoring system, clarity, cannot be stressed enough. Too much data transmitted, unclear explanations, difficult language, vague directives and obtuse follow-up instructions will seriously detract from the utility of any report. In trying to keep within these guidelines, five groups of indicators are proposed for inclusion in a Botswana Early Warning and Monitoring System. These are Meteorological Data, Agricultural Data, Food Prices, Nutrition Surveillance Data and semi-structured district reports.

4.5 Meteorology Reports

In an Early Warning and Monitoring System, the Meteorology Department is called on to provide the earliest assessment of water availability. Botswana is fortunate in that a well organized system of weather stations exist and that the climatological data has been analyzed in conjunction with the available agronomic data.* Traditionally, the condition of the rainfall early in the calendar year has been the prime indicator upon which a decision to declare drought has been made.

At present, the contribution of the meteorology department to drought management, through the IMDC, consists of the monthly weather summary and rainfall report and most recently, of an agrometeorological report. In the monthly weather summary, a general discussion is presented of regional and national climatic conditions. Included in this report are monthly rainfall estimates, their difference from a defined normal value for the month, a seasonal rainfall total, the seasonal norm in rainfall and the percentage departure from the norm. An example of this, from the April 1983 report, is

* For examples of cross-disciplinary analysis of meteorology data, see B.H. Wilson, "A Mini-Guide to the Water Resources of Botswana, Botswana Drought Symposium, 1979.", H.J. Cooke, "Botswana's Present Climate and the Evidence for Past Change," Botswana Drought Symposium, 1979., and D. Sims, Agroclimatological Information, Crop Requirements and Agricultural Zones for Botswana, Land Utilization Division, Ministry of Agriculture, January 1981.

presented in Table 4.1.

One of the difficulties in using the present weather summary reports is that it is presented in the specialized language of the climatologists. The average administrator, planner, or non-meteorologist may be hard pressed to interpret the report. For example, (from the April Weather Summary report):

On the 1st, the Indian Ocean high was still throwing a weak ridging into the Eastern parts of the sub-continent. A very weak trough of low pressure was over the Cape Province. The Atlantic Ocean high was ridging Southeastwards. At upper levels an anticyclone was sitting over the entire sub-continent which implies subsidence and hence fine weather.

Approximately the same date that the Meteorology Department declared that the country was experiencing 'fine weather,' the President announced that the country would enter into its second year of drought. While the Meteorology Department's terminology is certainly correct and precise, it becomes too specialized for a broad audience of users to understand. Consequently the narrative section of the monthly report fails to convey an understanding to the reader of the meaning of the national weather data and the broader situation in the region.

Until recently, there was a great deal of difficulty in linking the meteorological data with information on the needs for water by various sectors of the economy. As Stephen Sanford has suggested, drought in Botswana should be viewed in terms of a shortage of the supply of water relative to the competing demands of alternative users. In the past, the extent of this shortfall has varied by geographical area in the nation. Starting in March of this year, the Agrometeorology Unit was established within the Department of Meteorology to coordinate the linking of agricultural and meteorological data. A preliminary report was issued by this unit in June of 1983.

By assessing the rainfall availability and evapotranspiration rates for two crops, maize and sorghum, during their vegetative phase, the Agrometeorology Unit has been able to compute a water-sufficiency index for these crops, relative to established norms. Four years of yield and water satisfaction data were used to estimate a statistical relationship between the crop yield and the water satisfaction index. A strong relationship was also found between the water satisfaction index and the ratio of planted to harvested area. Using the agricultural department's estimates of planted area and forecasts of harvested area, estimates were made of total output.

In the June 1983 agrometeorological report, the authors found that the

average water satisfaction index for the 1982/1983 growing season were 62% for sorghum and 47% for maize and using the ratio between yield per harvested hectare and water stress, concluded that yields would be between 5 and 45 percent of the 1978/79 - 1981/82 averages for traditional crops. Furthermore, the authors found that the ratio of planted to harvested area was on the order of 35 to 45 percent.

This analysis was conducted using the agricultural extension regions as the geographical unit of analysis. Yield and acreage estimates were produced only for the national level yet the estimated water sufficiency indices were produced for each of the five extension regions. The estimated water sufficiency indices are presented in Table 4.2.

Preliminary discussions with the Agrometeorology Unit indicate that they are constrained by the lack of computing facilities with which to estimate water-sufficiency and make production projections. The turnaround time between the recording of rainfall during the vegetative period of the crops and the publication of the agrometeorology forecast appears to hinge primarily on the speed at which computations can be made.

The Agrometeorology Unit has tentatively scheduled the release of its' 1983/84 report for May of 1984. This would be approximately two months too late for it to be effectively used in planning imports of relief food and for locating distressed regions of the country. There are a number of recommendations for the incorporation of the meteorological department's information into an Early Warning and Monitoring system:

1. The monthly report should be continued in much the same format, excepting that a clear, non-technical, discussion of national and regional weather patterns should be ammended to the existing narrative. An attempt should be made to circulate these documents to the secretary and coordinator of the various district drought committees.
2. Computation facilities should be provided for the Agrometeorological Unit and an effort should be made to reduce the lag between rain station collection and the release of the Unit's report.

3. Agrometeorological production estimates should be provided on as disaggregated a basis as possible so that an estimate of the 'food-gap' for various regions of the nation can be estimated.

4.6 Agricultural Reports

The Ministry of Agriculture collects perhaps the most data of any of the Central Government Ministries, with the exception perhaps of the Central Statistics Office of the Ministry of Finance and Development Planning. The Agricultural Ministry conducts an annual Livestock and Crop Survey, more recently published under the title of Botswana Agricultural Statistics. This report provides a reasonably exhaustive set of information on livestock, crops, the farm community and land usage. In addition, the Agricultural Statistics Unit of the Ministry of Agriculture conducts a continuous Farm Management Survey which operates out of nine farm management stations. An annual publication, entitled the Farm Management Survey Results provides a description of the determinants of production for various types of crop and livestock farmers. Both of these sources of information, the annual agricultural survey and the farm enterprise survey, provide information which would be of value in an ex-post evaluation of the success of a relief campaign or the overall impact of the drought on crop and farm conditions. Because of the long lag between data collection and reporting, these studies are of little use in early warning and monitoring of a drought.

The Agricultural Department issues, each month, an agricultural situation report, based on data received from each of the agricultural extension districts. The format of these reports is largely the same. A one-page summary of the nation's agricultural condition is given, starting with a general statement and then followed by a paragraph on the planting or ploughing condition nationwide and a paragraph on the nation's livestock, grazing and watering condition. The report includes three maps of the nation showing the grazing, livestock and stock watering conditions by agricultural region. Examples of these three types of maps are shown in Map 4.1, Map 4.2 and Map 4.3. These reports were prepared by the Agricultural Statistics Unit of the Planning and Statistics Division of the Ministry of Agriculture, and are released approximately twenty to twenty-five days after the end of the reporting month.

These statistics are based on the Agricultural Extension Agent's monthly reports which are collected by the agricultural field assistants in each of the

TABLE 4.2

Mean regional and national F.A.O. Water Satisfaction Indexes for the 1982/83 and for the 1978/79-1981/82 rainy seasons.

| REGION (*) | SORGHUM INDEXES | | MAIZE INDEXES | |
|-----------------|-----------------|-------------|---------------|-------------|
| | 1982-1983 | 78/79-81/82 | 1982-1983 | 78/79-81/82 |
| Southern Region | 70 | 88 | 45 | 77 |
| Gaborone Region | 62 | 84 | 48 | 75 |
| Central Region | 44 | 79 | 35 | 69 |
| Francistown Reg | 51 | 87 | 40 | 76 |
| Maun Region | 81 | 84 | 68 | 77 |
| MEAN 5 REGIONS | 62 | 84 | 47 | 75 |

* Agricultural extension regions as represented in the 'Botswana Agricultural Statistics' publications.

REFERENCES:

1. Agrometeorological crop monitoring and forecasting, F.A.O. Plant Production and Protection Paper No.17, Roma, 1979.
2. Botswana Agricultural Statistics for the years 1979-1982, Ministry of Agriculture, Ministry of Finance & Development Planning, Gaborone.
3. Department of Meteorological Services (rainfall data).
4. Food and Agriculture Organization of the United Nations (Evapo-transpiration and crop coefficient data).

Source: Department of Meteorology, Agro-Meteorological Report, Draft, April 1983.

STOCK WATERING CONDITION

JANUARY

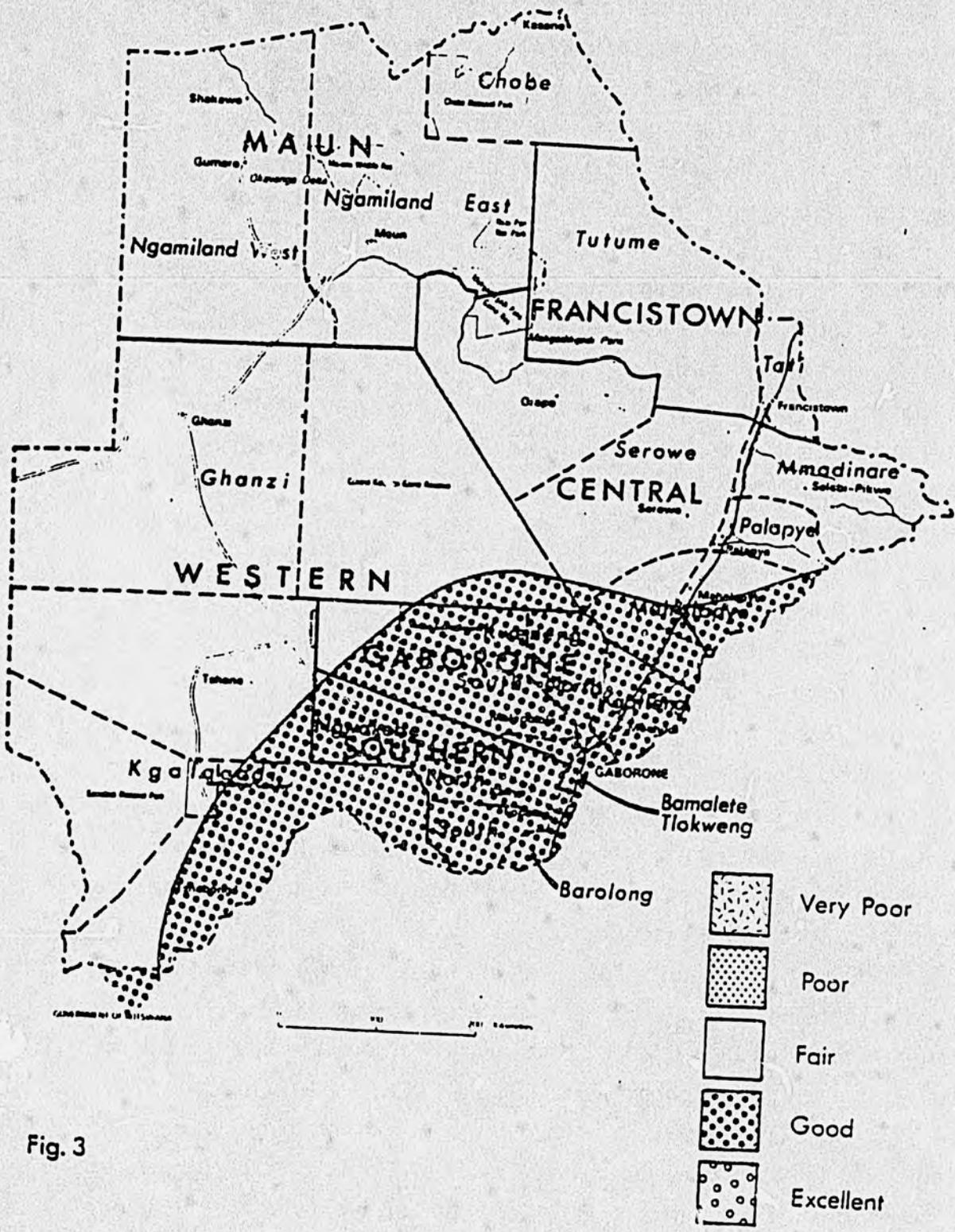


Fig. 3

Source: Ministry of Agriculture, Agricultural Situation Report, January 1983.

207 agricultural extension zones throughout the country. These reports are sent to the District Agricultural Officer who is charged to tabulate them and use them for the needs of his district. Another copy of the forms is sent to the Agricultural Statistics Office where they are compiled, by hand, and a national crop situation report produced. In practice, little use of these reports is made by the District Officers and practically the only analysis carried out with the reports is that by the Division of Planning and Statistics of the Ministry of Agriculture. There is a great deal more information included in these reports that would be useful for a drought warning and monitoring system in addition that that released in the monthly Agricultural Situation Report. The data that these reports are based on are not from a formal survey but are based on the subjective evaluation of the agricultural extension agent. An example of the monthly situation report form is provided in Table 4.3.

For an Early Warning and Monitoring System, the information on area ploughed, planted and likely to be harvested, based on the percentage of what would occur in a normal year, is a useful indicator of agricultural conditions in the nation. This information, presently used in the Agrometeorological forecasts, could be used on a disaggregated basis to provide the districts with a within-district assessment of their crop condition. In addition, as is now the case in the agricultural situation reports, information on livestock condition, grazing availability and stock watering position could be used to provide an indicator for livestock status throughout the nation and to trigger the movement of subsidized feed supplies or the encouragement of sale to the Botswana Meat Corporation agents and cooperatives.

One indicator that is not used at present, but which is available from the Agricultural Extension reports is the private food stores information. An estimation is made of the period of time for which adequate stores exist for sorghum, maize, millet and beans/peas. This indicator has six calibrated levels ranging from adequate supplies for 9 months down to nothing in store. To determine which parts of the nation have more of a reserve than others for which decisions on the movement of relief food can be made, the maximum amount of months of storage for either maize or sorghum should be used.

There are a number of problems with the use of this data. Like many other forms of data that are reported through the normal government channels, there are difficulties in ensuring that reports are sent in on time and that field collection of the data is conducted properly. Aggravating these problems

however, are two schisms with the Ministry of Agriculture. First, although the agricultural extension agent data is analyzed by the Planning and Statistics Division of the Ministry, they have little control, or influence over the collections and reporting procedures for this data. Control over the collection and reporting of the data rests with the Extension Division of the Ministry which has had difficulty coordinating the reform of its statistical collection service with the other branches of the Ministry. Another Schism within the Agricultural Ministry that inhibits the effective use of the extension agent reports is between the Planning and Statistics Division and the Livestock and Veterinary Division.

Frequently, Veterinary Services is in a far better position to evaluate the status of livestock and grazing conditions in the nation than are the extension agents. The veterinary services division has its own cadre of people in the field, including veterinary officers, livestock officers, stock inspectors and veterinary assistants. There is twice-a-day radio communication between all of the livestock districts and Gaborone regarding herd, grazing, watering and disease conditions. The veterinary officers also report monthly to the Livestock Division of the Ministry of Agriculture, although little quantitative information is contained in those reports. However, because the veterinary staff in the Ministry of Agriculture is normally well informed about herd and grazing conditions, they would be in a good position to screen Agricultural Department monthly situation reports on herd, grazing and watering conditions. To date, however, the livestock officials in the Ministry of Agriculture first see the reports after they are released for general circulation.

The use of the food stocks data is also prone to problems in interpretation. An examination of this data from previous year's shows that the figures immediately following the harvest and for a month or so thereafter accurately reflect the private stock situation in the nation. Thereafter, there is a tendency for the extension agent to continually record the same figure, regardless of the change in actual stock levels. Some agents, a few months following the harvest, will simply leave this question blank on the survey forms, apparently because they were unable to measure the stocks or because the stocks were not available. Improvement of the quality of this data will require the concentrated, coordinated effort of both the Division of Planning and Statistics and the Agricultural Extension Division of the Ministry of Agriculture.

There are several recommendations for the more effective utilization of the Agricultural Department's agricultural extension data base in an early warning and monitoring system:

1. The collaboration between the Ministry of Agriculture and the Meteorology Department should be continued and an attempt made to advance the release of the crop prediction report to February or March at the latest.
2. Data on percentage area ploughed, percentage area planted and percentage area likely to be harvested should be tabulated on a monthly basis by agricultural extension regions and included in the monthly agricultural situation report.
3. In addition to mapping the data on herd, grazing and stock watering conditions should be presented, in tabular form, for each agricultural district. This tabulation should include the present and the previous month's estimate for each agricultural demonstrator area within the district.
4. The herd condition, grazing condition and stock watering condition figures should be examined and confirmed by a representative of veterinary services before release to the general public.
5. Private food stock holding information should be tabulated monthly. The monthly report should include summary statistics for the national, regional and district holdings of the present and previous month. A detailed summary showing stock position by each of the agricultural demonstrator areas should be distributed to each of the agricultural districts on a monthly basis.
6. The Agricultural Extension division of the Ministry of Agriculture should seek guidance from the Central Statistics Office for measures to improve the collection and reporting of its monthly extension reports.

4.7 Food Prices

Food prices would be an important item to monitor for purposes of relief management. At present, because of differential transport costs, basic food prices vary considerably across the nation. One of the nation's major relief activities, the Labor-Based Public Works projects, aims to provide a subsistence wage to all those who participate. At present, that wage has been set at P1.50

across the nation. Careful monitoring of food prices may underscore the need for a variable wage rate to account for differences in cost of essential goods.

In some areas, temporary shortages of essential goods occur due to problems of availability at the mills and transport bottlenecks. Although marketing margins are controlled, areas of the nation which exhibit seasonal price rises may be experiencing localized shortages. Price monitoring could aid in identifying this and appropriate measures could be taken to confirm that speculative pricing is not occurring and that satisfactory supplies of food are available.

For some of the relief programmes; such as the feeding of Remote Area Dwellers, food purchases are made from local wholesale outlets and distributed directly by the RADO officers. Monitoring food prices around the nation would provide a means of assessing the financial advantages of local procurement versus commodity purchase and transfer from one of the government's depots. If economies of scale can be reached in the transfer of grain from a government depot to one of the remote areas then it may be possible to reduce the cost of the remote areas feeding programme.

Due to the institutional nature of price information in Botswana, there are several factors which complicate the interpretation of price statistics for drought relief management purposes. Even in a good year, the majority of Botswana's staple food goods are imported. In 1981, 89% of Botswana's imports came from South Africa or through South African suppliers. Botswana's participation in the Customs Union with South Africa allows for a free flow of goods and services across the South African border. Consequently, price movements of essential commodities generally reflect, with a lag of less than a fiscal quarter, the movement of prices in South Africa. Any interpretation of domestic price trends that fails to take into account pricing and monetary policies in South Africa would be in danger of producing spurious results.

Foodstuff prices in Botswana are also controlled by the government. The Botswana Agricultural Marketing Board sets a guaranteed producer price for essential crops before the cropping season and then establishes a release price on the basis of landed cost plus overhead. The Price Controllers office, under the Control of Food Act and the Control of Goods Trading Regulation, set the maximum allowable percentage mark-up for essential goods. For maize meal, wheat, rice and sorghum the mark-up is 10 percent while for other items, such as tinned food, the margin is 25 percent. This system of controlled mark-ups is

difficult to monitor and penalties are seldom applied for non-compliance. In addition, foodgrain imports are dominated by three groups, BAMB, SEFALANA and Corn Products. The market control of these three importers allows them to exert a significant influence on retail price formation.

Keeping these qualifications in mind, it is still possible that domestic food prices — although subject to South African influence, tight domestic control and monopolistic factor pricing — can be used to improve the efficiency of drought relief delivery. There are several agencies that regularly collect food prices.

The Food Price Controller monitors retail and wholesale prices of regulated foodstuffs as part of its attempt to control margins; the Ministry of Agriculture monitors food prices as part of their continuous Farm Management Survey; the Botswana Agricultural Marketing Board monitors border and domestic prices to be used in setting its procurement and release prices and the Central Statistics Office monitors prices for use in the computation of its Consumer Price Index. The CSO's retail price series is the most complete and detailed of any of the regularly collected price series.

Prices have been collected by CSO since 1971. Until 1974 they were used to compute a food price index. Between 1974 and 1980 an all-purpose cost of living index was computed with an expanded set of commodities. In August of 1980, the price series was revised and twenty new commodities were added to the collection list. In 1980 the price series was expanded to include, in addition to the previously recorded four towns and six major villages, other villages with a population of more than 3,000 (at the time of the 1971 census). The CSO regularly collects price information on thirty-eight food items which are as follows:

- | | |
|----------------------|--------------------|
| 1. maize meal | 2. sorghum |
| 3. wheat flour bread | 4. rice |
| 5. white bread | 6. chicken |
| 7. beef | 8. mutton |
| 9. corned beef tin | 10. pilchards tin |
| 11. fresh milk | 12. ideal milk |
| 13. powdered milk | 14. butter |
| 15. margarine | 16. cheddar cheese |
| 17. eggs | 18. potatoes |
| 19. tomatoes | 20. onions |

- | | |
|--------------------|-----------------------|
| 21. oranges | 22. bananas |
| 23. apples | 24. chilli sauce |
| 25. canned beans | 26. Cadbury chocolate |
| 27. canned peaches | 28. biscuits |
| 29. fat cakes | 30. cooking fat |
| 31. salt | 32. sugar |
| 33. coca cola | 34. tea |
| 35. coffee | 36. chibuku |
| 37. beer | 38. brandy |

Prices are also collected for seventy-four non-food goods and services. These prices are collected from 469 retail locations throughout the country. A table showing the number of price collection outlets for each major center is shown as Table 4.4. Each month four enumerators from the CSO office in Gaborone are dispatched to collect these price statistics. In a two week period, slightly more than 7,000 price quotes are collected. These are reported back to CSO and are entered into the cost-of-living computer package at computer services. Using 1978/79 prices as a base, cost-of-living indices are calculated for the four cities, large and small villages and for the nation as a whole. No information on commodity-by-commodity price movement is released.

There are certain difficulties inherent in the use of this price series data set. Certain establishments do not have particular items in stock or may have a different size or quality of item in stock than that which is needed for the price assessment. Consequently, it is difficult to insure that the prices CSO records are for similar quantities and qualities of basic items. Beyond the prices of maize meal and sorghum, it appears that many of the other food items either 1) are not available regularly in the markets, 2) experience price variation due to quality factors (e.g. fruits) or 3) vary little by region (e.g. coca cola). Since maize meal and sorghum represent the bulk of the staple food consumption, and since the staple food's dominate the budget of the poor consumer, it is sensible that these items be selected as indicators of food price formation.

Prices of maize meal and sorghum, in selected locations, are presented for April 1983, in Tables 4.5 and 4.6. An Index of these prices, relative to a set of non-food prices, is also provided. From Table 4.5, we can see that the April 1983 price of maize meal in Maun is twenty percent higher than the same month's price in Gaborone. From Table 4.6, we find that the sorghum price in

TABLE 4.4

PRICE COLLECTION POINTS 1983

| <u>Region</u> | <u>Number of Collection Points</u> |
|------------------|------------------------------------|
| (1) Gaborone | 67 |
| (2) Francistown | 36 |
| (3) Lobatse | 33 |
| (4) Selibe-Pikwe | 45 |
| (5) Palapye | 19 |
| (6) Mahalapye | 29 |
| (7) Mochudi | 21 |
| (8) Kanye | 22 |
| (9) Serowe | 26 |
| (10) Molepolole | 27 |
| (11) Maun | 34 |
| (12) Mmadinare | 18 |
| (13) Tonota | 29 |
| (14) Shoshong | 10 |
| (15) Moshupa | 18 |
| (16) Thamaga | 15 |
| (17) Ramotswa | 22 |

Source: Printouts from Cost-of-Living file, Central Statistics Office, 1983.

Maun in April 1983 is also twenty percent higher than the sorghum price in Gaborone. Although administrative problems may intervene, it appears sensible to alter the wage rate for the labor-based relief projects by the difference in basic staple costs. From an examination of the price indices presented in Tables 4.5 and 4.6, we can see that the prices of these staples, relative to a set of non-food items, have not all increased at the same rate. In Gaborone, for example, maize meal prices increased at roughly the same rate as the prices of household effects and fuel while in Moshupa, maize meal prices rose twelve percent faster than the non-food prices. This difference in the index is important in that it underscores that the rate of change in food prices will vary by the regions.

For an Early Warning and Monitoring System, it would be useful to examine the variation in the current price of the staples throughout the nation and also the contemporaneous change in staple price by region of the country. The change in price could be easily represented by the percentage change in food price from one month to the next. To calculate this, one would subtract the previous month's price from the present month's price. Any region which exhibited a change in food price of, for example, more than twice the rate of change in the grand food price index would be flagged as an area of rapid price rise, requiring further investigation.

The following measures are proposed to allow for the incorporation of food price data into the Early Warning and Monitoring System:

- a. A listing is prepared of the average monthly price of maize meal and sorghum for the specified seventeen statistics areas. The current price figures should be used for the averaging and care must be exercised to see that similar weights and qualities of the product are used in the calculation.
- b. The percentage difference between the present month's price and the previous month's price should be calculated. Any region that exhibits a rise in staple price more than twice the percentage rise in the grand food price index should be flagged as regions requiring further investigation.

4.8 Nutrition Surveillance

The nutrition surveillance system, since its inception in January 1978 has been the main tool for monitoring the status of the human population during

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TABLE 4.5

CURRENT, BASE AND REAL PRICE OF MAIZE MEAL IN SELECTED
CENTERS OF BOTSWANA, APRIL 1983 *

| <u>Region</u> * | <u>Current Price</u> (Pula per 12.5 kilogram bag) | <u>Base Price</u> | <u>Real Price Index</u> |
|----------------------|---|-------------------|-------------------------|
| 1. Gaborone (19) | 4.51 | 3.39 | 99.5 |
| 2. Francistown (8) | 4.41 | 3.56 | 92.7 |
| 3. Lobatse (10) | 4.48 | 3.34 | 100.4 |
| 4. Selibe-Pikwe (17) | 4.71 | 3.33 | 105.8 |
| 5. Palapye (9) | 4.54 | 3.36 | 101.1 |
| 6. Mahalapye (7) | 4.86 | 3.48 | 104.5 |
| 7. Mochudi (10) | 4.55 | 3.41 | 99.8 |
| 8. Kanye (9) | 4.58 | 3.41 | 100.5 |
| 9. Serowe (11) | 4.80 | 3.56 | 100.9 |
| 10. Molepolole (17) | 4.81 | 3.70 | 97.3 |
| 11. Maun (17) | 5.38 | 4.22 | 95.4 |
| 12. Mmadinare (8) | 4.70 | 3.73 | 94.3 |
| 13. Tonota (14) | 4.68 | 3.59 | 97.5 |
| 14. Shoshong (7) | 4.82 | 3.38 | 106.7 |
| 15. Moshupa (9) | 5.02 | 3.38 | 111.7 |
| 16. Thamaga (5) | 4.97 | 3.35 | 110.0 |
| 17. Ramotswa (7) | 4.73 | 3.84 | 92.2 |

* The current price refers to the April 1983 price and the base price is the price in August 1980 Pula. The price index was calculated by dividing the current by the base price and that sum by the national Household Effects and Fuel Index for April 1983.
Source: Computer Printouts, Central Statistics Office, 1983.

** Numbers in parenthesis refer to the number of retail outlets reporting in the previous month.

TABLE 4.6CURRENT, BASE AND REAL PRICES OF SORGHUM IN SELECTED CENTERS
OF BOTSWANA, APRIL 1983*

| <u>Region*</u> | <u>Current Price</u> (Pula per 10 kilogram bag) | <u>Base Price</u> | <u>Real Price Index</u> |
|---------------------|---|-------------------|-------------------------|
| 1. Gaborone (10) | 4.98 | 3.27 | 113.9 |
| 2. Francistown (2) | 4.32 | 3.23 | 100.1 |
| 3. Lobatse (3) | 4.41 | 3.42 | 96.5 |
| 4. Selibe-Pikwe (3) | 4.30 | 3.14 | 102.5 |
| 5. Mahalapye (1) | 4.76 | 3.71 | 96.0 |
| 6. Mochudi (1) | 4.61 | 3.59 | 96.1 |
| 7. Kanye (4) | 5.12 | 2.88 | 133.1 |
| 8. Molepolole (1) | 5.95 | 3.71 | 120.0 |
| 9. Maun (2) | 5.30 | 3.71 | 104.7 |
| 10. Moshupa (2) | 4.68 | 3.21 | 109.4 |
| 11. Thamaga (1) | 4.52 | 3.55 | 95.3 |
| 12. Ramotswa (1) | 4.36 | 3.54 | 92.1 |

* Current price is the April 1983 commodity price and the base price estimate refers to the price expressed in terms of August 1980 Pula. The Real Price Index is computed by dividing the current price by the base price and then that sum by the national Household Effects and Fuel Price Index for April 1983. The Real Price Index can be interpreted as the percentage price change of the commodity relative to a basket of non-food items since August 1980.

** Figures in parenthesis refer to the number of outlets reporting a price quote for a 10kg sack. In certain cases, figures for a 12.5 kg sack were adjusted to accord with the 10kg standard.

Source: Computer Printouts, Central Statistics Office, 1983.

drought and non-drought periods. This monitoring system has been reviewed twice during the past five years, and a number of changes in the collection and reporting system have been proposed.*

As part of the nutrition surveillance system, all under-five children that report to a clinic or health post for the child health day are weighed and their weight plotted against their age on a 'Road to Health' card. Once a month the health point sends its Master Clinic Chart (actually a master road to health card) to the Regional Medical Office and a copy is sent to the Central Statistics Office.** With a lag period of only one month, the Central Statistics Office is able to process and issue a report on the nutritional status of children around the country.

In its' monthly report, CSO provides a listing of those clinics and health points that have more than forty percent of their children at risk. At risk is defined as those who are below eighty percent of the Harvard Growth Standard. The report includes a presentation of the aggregate risk figures (again defined by percentage below 80 percent weight for age) for the past six months for each health region, along with the number of clinics reporting in each region. Another summary is presented with at-risk information for ecological zones. There is also a detailed breakdown for each region with the risk figures by health facility and the total number of those below the age of five attending each facility.

*The most recent evaluation was conducted by Victoria Quinn of Cornell University's Nutrition Surveillance Project and UNICEF under the guidance of the Family Health Division of the Ministry of Health. This report is a follow-up to Ms. Quinn's earlier work and focuses more on linking the nutrition surveillance data with other relevant data for purposes of improving drought relief management.

**Another nutrition surveillance system used in certain facilities involves the recording of weight and height data, the registering of these figures in Central Statistics Office computer forms, and mailing the results to CSO. Few Health points collect or circulate this information and recommendations are now pending before the Ministry of Health to abolish the collection of height data.

There are a number of problems with the use of the surveillance system. First of all, coverage appears to be rather poor, especially considering the tremendous increase in health facility attendance as a result of the implementation of the free-food distribution programme under drought relief to all under-5's which began in April 1982. A few figures can illustrate the coverage problems:

| | |
|---|---------|
| 1. Number of Health Facilities Reporting to the Surveillance System (Feb. 1983) | 361 |
| 2. Total Number of Health Facilities that Report to Nutrition Surveillance | 519 |
| 3. Total Number of Health Facilities Recorded by Medical Statistics | 703 |
| 4. Number of Children Covered by Nutritional Surveillance (Feb. 1983) | 58,905 |
| 5. Number of Children Receiving Drought Relief (from Food Resources Report) | 114,000 |
| 6. Total Under-5 Population | 177,000 |

Only half of those who are weighed in the health points and are provided food have their estimates recorded in the national nutrition surveillance system. Of a potential population of 177,000 children, only a third are covered in the monitoring system. Problems in coverage appear to be largely associated with difficulty in reporting, delays in lack of participation of mobile health stops in the reporting process.

Aside from the under-reporting problem, this system also suffers from being saddled with a confusing and error prone collection and data transmission system. The present system, of recording the dots on a Master Clinic Growth card and sending it to the regional and central offices is fraught with problems. There tends to be an under-dotting problem; not all of the cards are mailed on; regional health officials and central government officers complain about the difficulty of 'counting the dots' and consequently, at the regional level, an assessment of nutrition status is generally delayed until the central government report from CSO is received. There are also difficulties associated with interpreting the data.

A recent evaluation of the nutrition surveillance system shows that certain clinics significantly mis-weigh the children. Since 58 percent of the

health stations have a population of less than 100 children, a small error in weighing can drastically alter the reported prevalence of children below 80 percent of weight for age. Consequently, regional medical officers and clinic staff themselves have a difficult time determining whether monthly changes refer to biological phenomena or simply to measurement noise.

The reports that are sent from the Central Statistics Office to the Regional Medical Officers suffer from poor presentation and an overload of data. Regional Medical Officers complain that the report "takes up too much room in their files," and in fact, the average monthly summary is approximately thirty pages long. No discussion of trends in the data or queries from the National Nutrition Surveillance office is included; essentially tabulated data by itself is returned to the districts. In addition, no guidance is given to the districts as to what constitutes a major change in prevalence figures. Consequently, little attention is paid to the changes in status of the population at a health facility, instead the focus is placed on the reported risk figure of the present month. The lack of guidelines for evaluating change in prevalence means that nutritional problems in the clinics are not diagnosed (e.g. paid attention to) until they become serious (e.g. more than forty percent undernourished).

The recent Cornell University/UNICEF evaluation of the nutritional surveillance system presents several means for overcoming many of these shortfalls. Included in those recommendations are measures to improve the accuracy of the clinic statistics, use of a simplified reporting form and a proposal for the use of thinness charts to segregate those who are wasted from those who are stunted. These recommendations seem highly sensible and should be piloted for implementation as soon as possible.

In the meantime, the existing nutritional surveillance data, with all of its faults still provides the best source of information on the welfare condition of the human population. Even with the difficulties involved in evaluating this information, it is still advantageous for it to be utilized as an important source of information for an Early Warning and Monitoring System. To more effectively utilize this information for Early Warning and Monitoring purposes it is suggested that:

1. The monthly CSO report be altered to include, for each health region, the most recent month's prevalence figure, the percentage change over the past two months. A set of guidelines from the Nutrition Unit

of the Ministry of Health should be prepared to inform Health Center personnel about the proper means to interpret change in prevalence figures.

2. Each health region should be sent the national summary statistics and the detailed breakdown information for their region only.
3. A special summary should be prepared for the Inter-Ministerial Drought Committee with prevalence figures by Health Region, Eco-Zone and Administrative District. Since drought relief allocation decisions are made by administrative districts rather than health regions, it is imperative that information on district nutrition status be made available to the national relief planners.
4. Both the reports sent to the Regional Medical Teams and the National Summary report should include a narrative prepared by the Nutrition Unit of the Ministry of Health. This narrative should identify changes in regional and national prevalence figures, highlight areas that appear to be experiencing a decline in nutritional status, provide an explanation for changes in nutritional status (on the basis of RMO and RHENO reports) and provide information on drought relief programmes (e.g. availability of foods, cooking materials, etc.).

As changes are incorporated in the collection procedures of the nutrition surveillance system, new information may be available which will be of use to an Early Warning and Monitoring System. In the suggested procedures for improving the nutrition surveillance system, a recommendation was made to include a check mark by the name of each child who has received relief food during the past month. Use of this information, on a health facility basis, in conjunction with the nutrition-outcome prevalence figures, would enable the continuous monitoring of the supplementary feeding programme and enable the comparison of feeding programme participation with nutritional status.

4.9 Unstructured Reports

The fifth leg of an Early Warning and Monitoring System would consist of the set of unstructured reports that are sent from the Inter-Ministerial Drought Committee to the districts and from the District Drought Committees to the Inter-Ministerial Drought Committee. In the past, communication between both levels has been fairly haphazard and irregular.

Recently, a bi-monthly pro-forma for evaluating drought relief projects has been prepared by the Food Resources Department and will be tested in the districts in June. The districts would be required to submit a progress report every two months which would include a fairly detailed evaluation of the vulnerable group feeding programme, the school feeding programme, the status of the feeding center, the remote area dweller programme, the cattle purchase scheme, the labor based relief projects and the financial status of relief expenditures in the district. If this pro-forma is appropriately utilized, it will lead to a noticeable improvement in the monitoring and management of relief project implementation in the districts. Most likely, however, few of these forms will be returned completed and those that are submitted will probably be inaccurate and incomplete.

There are several reasons why the District Drought Committees will be unable to comply with the evaluation requirements of the Food Resources Department's progress report pro-forma. First, the composition of the District Drought Committees are such that the secretary is generally a young, or low-ranking official, in many cases overburdened with several portfolios and often not able to visit much of his or her district due to a shortage of transport. Many of the drought committee secretaries have put aside their normal 'filling-in-forms' duties in order to devote more time to drought relief management.

In many cases, the District Drought Committees meet so irregularly that the secretary would hardly have the opportunity to meet with those who are supervising the projects in the field every two months. One of the functions of the minutes from the present district drought committee meetings is to serve as a medium for informing the Inter-Ministerial Drought Committee of the status of relief projects, problems that have arisen in the course of implementation and any changes in the severity of the drought in the district. Even in the best of district drought committee reports — which appear to be, surprisingly enough, those from Maun — the information that is presented is far too superficial to be used in any sort of national level district-by-district comparison. The districts are generally allowed a great deal of autonomy in planning and implementing the drought relief campaign. This is as it should be since the ultimate executory responsibility for the management of relief implementation lies with the District Committee. However, since funding and overall relief programming are the responsibility of the Inter-Ministerial Drought Committee, more input on their part into the agenda of District

Drought Committee meetings and the reporting format of the committee would be of use.

Problems in communication appear to be more severe from the center to the districts than from the districts to the center. The drought relief circulars are often unclear. A notable example of this was the circular sent on identification and registration of individuals left destitute by the drought last year. The registration procedures for this were so unclear that, by the start of the second year's relief campaign, nearly half of the drought-destitutes in the nation were not being fed and a call was issued for re-compilation of the destitute lists. On occasion, circulars have been issued that replace previous instructions, without indicating that is what is being done. For example, the initial circular issued in April of 1982 on the school hand-stamping programme made no distinction between the status of supervisors and the stampers. At least two sub-districts informed the schools that supervisors would be paid a wage for their efforts in this programme. A later circular issued by the Food Resources Department stated that schoolmasters were to be the programme supervisors and that they in fact, would receive no extra compensation. The later circular contained no mention of the fact that it was superceding the earlier hand-stamping instructions. In addition to these sort of problems, there appears to be a general lack of awareness on the part of those working in district relief implementation of who they can, and should, turn to when problems arise in the course of their work. Often when food supplies are exhausted in a health post the family welfare educator or the nursing sister will contact their local depot. If she receives no relief from the depot then generally she will turn to the RMO who, in turn, will approach the District Commissioner. At one point last year the district officer from the sub-district of Tutume repeatedly contacted the Food Resources Department about a shortage of food in his district. Apparently his complaints went to the wrong source, for his sub-district went without relief food for three months of last year. This problem of unclear directives and an undefined hierarchy for complaint can be readily corrected. In order to effectively utilize the unstructured reports as a component in Early Warning and Monitoring, the following is suggested:

1. The Inter-Ministerial Drought Committee issue a set of guidelines for the composition, frequency and minute/reporting requirements of the District Drought Committee meetings. A representative of the

Inter-Ministerial Drought Committee should attend each of the District Drought Committee meetings. This responsibility can be rotated in the Inter-Ministerial Drought Committee as to avoid undue load on one individual and to spread the responsibility for being a communication link over several persons.

2. A representative of the Food Resources Department should be dispatched to the districts to help them with their first attempt at filling in the progress report proforma. The progress report proforms itself should be revised as the need arises.
3. A clear directive should be issued to all District Drought Committees detailing the hierarchy of drought relief management. Particular attention should be paid to the articulation of a set of procedures for voicing and registering a complaint when relief obligations by the central government are not met.
4. All circulars dispatched to the District Drought Committees should be clear, simple and complete. In cases where new regulations supercede old regulations, mention should be made of that fact. It should be the obligation of the party that send out the circular to follow-up and request feedback from the districts to see if his message was clearly received.

4.10 The Logistics of Implementation

Several measures will be required if an Early Warning and Monitoring System is to be implemented. Implementation of any sort of activity requiring cooperation by several Ministries is liable to be a long-term, trouble-prone proposition. Fortunately, this process has already been initiated as part of Botswana's participation in the Southern African Development Coordinating Conference (SADCC) negotiations for a Regional Early Warning System.

Since September 1981, a sub-committee of SADCC has been developing plans for the formation of a regional early warning system. This would have the aim of devising a regional early warning system which would "draw on existing national early warning systems, which will provide timely key information on supply prospects of basic foodstuffs in order to determine if, when and how domestic food supplies need augmentation from other countries within the region or sources outside the region." (SADCC. 1983).

As a result of a conference and technical evaluation mission on food security for the SADCC nations, a request was made for a follow-up mission to examine the feasibility of a regional early warning system. This was conducted during April to July of 1982 and a initial report was issued in November of 1982. This was discussed and revised in a SADCC meeting in Harare in April of 1983.

The April 1983 revised report concluded that a regional early warning system should be established in Harare to serve as a collection point for reports from the member nations and to provide a regional focus to the food needs and status of the group. The regional early warning system is to be built on the strength's of the existing national systems, of which Botswana's is cited to be the strongest, and most advanced of any of the member states.

The SADCC Early Warning Proposals called for Botswana's participation to be based on the Agricultural Situation Report, a series of Agro-meteorology reports, reports on the Agricultural Marketing Board's (BAMB) procurement and stock situation and the nutrition surveillance system. The initial document recommended that the national early warning system be located in the Inter-Ministerial Drought Committee with support from the Ministry of Finance and Development Planning. Subsequent drafts suggest that the Early Warning System be located in the Agricultural Planning and Statistics Department of the Ministry of Agriculture.

To implement the early warning system in Botswana, the SADCC proposals suggest that an agricultural economist, a statistician and agro-meteorologist be dispatched to the coordinating agency. In addition, a request is made for vehicles, a micro-computer and software, calculators and maps. These requests were voiced locally in a memo from representatives of the Ministry of Agriculture and the Department of Meteorological Services reviewing the SADCC proposals. (Motsemme, 1983)

The SADCC Early Warning System, as it is now envisioned, appears to be a good framework for the implementation of a multi-ministry warning and monitoring system. There are, however, certain drawbacks to the agreements themselves and the means by which they were agreed upon. For example, the authors of the SADCC proposal obviously meant that drought monitoring would receive a high priority in terms of the use of the early warning system outputs. For that reason, the Inter-Ministerial Drought Committee, and the Ministry of Finance and Development Planning were selected as the overall coordinators

As a result of a conference and technical evaluation mission on food security for the SADCC nations, a request was made for a follow-up mission to examine the feasibility of a regional early warning system. This was conducted during April to July of 1982 and a initial report was issued in November of 1982. This was discussed and revised in a SADCC meeting in Harare in April of 1983.

The April 1983 revised report concluded that a regional early warning system should be established in Harare to serve as a collection point for reports from the member nations and to provide a regional focus to the food needs and status of the group. The regional early warning system is to be built on the strengths of the existing national systems, of which Botswana's is cited to be the strongest, and most advanced of any of the member states.

The SADCC Early Warning Proposals called for Botswana's participation to be based on the Agricultural Situation Report, a series of Agro-meteorology reports, reports on the Agricultural Marketing Board's (BAMB) procurement and stock situation and the nutrition surveillance system. The initial document recommended that the national early warning system be located in the Inter-Ministerial Drought Committee with support from the Ministry of Finance and Development Planning. Subsequent drafts suggest that the Early Warning System be located in the Agricultural Planning and Statistics Department of the Ministry of Agriculture.

To implement the early warning system in Botswana, the SADCC proposals suggest that an agricultural economist, a statistician and agro-meteorologist be dispatched to the coordinating agency. In addition, a request is made for vehicles, a micro-computer and software, calculators and maps. These requests were voiced locally in a memo from representatives of the Ministry of Agriculture and the Department of Meteorological Services reviewing the SADCC proposals. (Motsemme, 1983)

The SADCC Early Warning System, as it is now envisioned, appears to be a good framework for the implementation of a multi-ministry warning and monitoring system. There are, however, certain drawbacks to the agreements themselves and the means by which they were agreed upon. For example, the authors of the SADCC proposal obviously meant that drought monitoring would

for the group. Representatives from the Agricultural Department and the Meteorology Department have suggested that overall coordination be provided by the Planning and Statistics Unit of Agriculture. While it is true that the Planning and Statistics Unit has personnel capable of leading such a project, their department has very little contact with any of the officials involved in drought relief activities. Consequently, locating the project in that Ministry would lead to the danger of poor communication of the results to those operating the relief efforts.

In addition, it appears that the negotiations for the SADCC agreements were primarily the result of the involvement of the Department of Agriculture and the Meteorology Department. As late as April 1983, key members of the Inter-Ministerial Drought Committee were unaware that any such system for early warning had been proposed. If successful cooperation between the Ministries is to be established then it will be necessary to conduct future planning efforts with the input of all those agencies slated to participate.

With these reservations in mind, it appears that the Warning System measures negotiated under SADCC provide the best vehicle for the implementation of a multi-ministry warning and monitoring system. The manpower and equipment requests made in the SADCC proposals are reasonable in light of the importance of Early Warning to Botswana and to the region as a whole. Further consideration should be given to the forum for coordinating the activities of the Early Warning and Monitoring group, and particular attention should be granted to the needs of those involved in the management of drought relief activities.

4.11 The Coordinating Committee

In order to operationalize an Early Warning and Monitoring System, it will be necessary to establish a coordinating committee. Early efforts to this end have already been undertaken within the framework of the SADCC Agreement. More follow-up in this area will be necessary if the Early Warning System is to be put into effect.

In keeping with the recommendation in this report, there is a logical set of individuals that should be involved in an Early Warning System Coordinating Committee. The Committee should be chaired and led by the Secretary of the Inter-Ministerial Drought Committee. In June of 1983, the Rural Development Committee decided that a permanent post should be established for the

secretary of the Inter-Ministerial Drought Committee. That would imply that the individual who fills that post will have more time to devote to drought monitoring than the present secretary who is, at the least, quite over-worked. It is important that the Early Warning and Monitoring System have a tight chain of communication with the Inter-Ministerial Drought Committee and that information regularly flows to those in the districts who need it to plan their relief campaigns. Having the secretary of the Inter-Ministerial Drought Committee chair this group would help to insure that the aforementioned requirements are satisfied. As an extra-guarantee, it would be beneficial to include the drought relief planner from the Food Resources Department of the Ministry of Local Government and Lands on this Committee as that individual is responsible for a considerable share of the planning of the human relief campaign.

Members from the various Central Government Ministries whose data is required by the Early Warning and Monitoring System will be required to sit in a technical capacity on the Coordinating Board. This would include a representative from the nutrition surveillance programme of the Ministry of Health, representatives from Agricultural Statistics and Planning, Veterinary Services and Agricultural Extension from the Ministry of Agriculture, a representative from the Agro-meteorology Unit of the Meteorology Department and the statistician responsible for supervision of the price series from the Central Statistics Office of the Ministry of Finance and Development Planning. These individuals would sit on the coordinating committee, be responsible for providing the narrative section of the Early Warning and Monitoring Reports and would be required to clear the reports before they are distributed.

The Committee as a whole would be required to establish a publication format, a time-schedule for the dissemination of the reports, a distribution list for the reports, for the facilitation of data-entry and, within their own Ministries, of data collection. It is suggested that the Committee meet monthly and aim for a monthly publication schedule. When the system is operable, it will be necessary for the committee to seek feedback from the users of the reports. Improvements in reporting format, report content and timing of the reports should be made as needed.

Finally, it cannot be emphasized enough that the quality of the reports can be no better than the quality of the data that they are based on. Once the information is widely disseminated, it is more likely that data inadequacies will

be identified and brought to the attention of the collecting agency. The Coordinating Committee should play an active role in improving the collection and transmission procedures of those in the field who produce the data base. The Committee should recommend, and through their respective ministries, organize a training/demonstration sessions on data collection and survey techniques for those who collect the data. It is important that the Committee serve as an active link between those in the field and the group that generates the final report. Reliance on poor data is better than reliance on no data at all; however, the better the quality the data, the better the potential quality of the Early Warning and Monitoring Reports. Invariably, the confidence of the user will hinge on the accuracy and timeliness of the information he receives.

4.12 Computer Processing Needs

An Early Warning and Monitoring System will require the rapid processing and handling of large volumes of data in a short period of time. In addition, inter-departmental cooperation on this venture will require that several departments have access to the same data base.

It appears that, at present, it would be advantageous to establish the early warning system on a micro-computer. There are several reasons for this.

At times, Early Warning System reports will have to be issued before all of the data from the various field sites reaches Gaborone. On occasion it may be necessary to re-issue the same month's report two or three times as additional data is available. It would not appear to be an efficient use of the main-frame computer if it was used for re-processing the same report several times each month.

Another advantage of the mini-computers over the main-frame in this case is that timeliness is of the essence in issuing these reports. Delays in access to the main-frame during peak user periods could jeopardize the timely release of drought management information.

Finally, in many respects the contemporary mini-computer models are more user-friendly than the main frame machine. The implementation of the Early Warning and Monitoring System will require the close cooperation of several departments, but, more specifically, of several individuals who have relatively little exposure to computer processing. The use of a more user-friendly machine may serve as an added inducement to the rapid implementation of the system.

Regardless of what sort of computer hardware is selected, some form of computer software must be developed to process the data and produce a report in the proper format with the minimum amount of user sophistication. The final format of the Early Warning System reports will be a matter for the coordinating committee to determine. Suffice it to say, most of the programming required will be a matter of setting up a proper file system, a series of tabulation procedures and a text-processing routine for the narrative component of the report. In addition, an address registry should be established to record the distribution list for the reports and to provide a distribution calendar and distribution accounting record for the distribution reports. A code-book for data input must be prepared as should proper documentation for the source programme and the file system. This is not a very complicated programming job per se — what may lead to complications is the need to coordinate data input and report generation amongst the various ministries. If the computer services department is unable to second a programmer with micro-computer experience to the Early Warning project, then it would be best to recruit an outside consultant for a two to three month period.

It should be made clear that whoever prepares the software for the Early Warning System must run through an adequate set of debugging exercises and must provide complete documentation of the final programme. In addition, that individual must instruct the various ministries in the operation of the programme, should discuss the structure of the programme with the computer services department and should hold a small course to introduce the computer to the user-ministries.

Once the software is prepared, it will be the obligation of each Ministry to provide an individual to input the Ministries data. Furthermore, the coordinating committee of the Early Warning System will be obliged to review all reports to insure that misleading reports are not disseminated. It is important that the responsibility for the data input and the review of the Warning System documents rest with the entire coordinating committee and are not placed inequitably on one ministry or office.

V. CONCLUSIONS

Drought is a persistent problem in Botswana and one of the consequences of drought is the appearance of severe food shortages amongst a large share of the population. This is well known and appreciated. To mitigate against the negative consequences of drought the Government of Botswana has mounted a widespread relief campaign. The projected relief expenditures for 1983/84 total 34 million Pula, the largest sum spent on relief in Botswana's history. The need to institute a relief programme during times of drought is also well understood and appreciated.

What is less clearly understood and appreciated is the need for effective management of information that can be used to plan, monitor and evaluate the relief campaign. Improved information management can lead to a more efficient and effective delivery of services. The consequences of poor information management are obvious and all too familiar: hastily designed relief programmes, improper targetting, cost overruns, late starting and stopping of programmes, haphazard delivery of relief goods and services, little evidence upon which to evaluate programmes and overall management of information needed to mount an effective drought relief campaign can only contribute to a waste of the relief resources needed to alleviate suffering.

The lack of an Early Warning System to monitor the severity and effects of drought has been bemoaned by 'drought analysts' in Botswana for nearly twenty years. The development of an efficient Early Warning and Monitoring System whose principal aim would be the improvement of drought relief management is still badly needed. The development of such a system would not require the collection of any new statistical series. Existing agricultural, livestock, food prices, meteorology and nutritional surveillance data bases, coupled with semi-structured district reports, could be used to form the nucleus of an Early Warning and Monitoring System. If these data bases are to be effectively used, certain changes must be made in reporting and tabulation procedures. Very few major changes are required to initiate a well coordinated Inter-Ministerial Warning and Monitoring System.

Coordination amongst Ministries (that sometimes appear to have practically divergent aims and interests) is the key element in the formula for improvement of the management of drought relief information. The formation of an Early Warning and Monitoring System Coordinating Committee and the provision of the minimum amount of necessary resources to activate such a system will be a test of bureaucratic commitment to improved drought relief management.

APPENDIX 1

TERMS OF REFERENCE

The original terms of reference provided to the consultant are as follows:

... will consult with the MCH section of the Government of Botswana Ministry of Health and the Inter-Ministerial Drought Committee, under the guidance of the Cornell University Nutrition Surveillance Programme. As a follow-up to the Cornell Nutrition Surveillance Programme/UNICEF study of nutritional surveillance, the consultant will investigate causes of drought and responses to food shortages, to identify indicators to complement the existing nutritional surveillance system and to suggest programs to improve warning capabilities and reduce vulnerability to nutritional deprivation. These recommendations are to be part of a Cornell University/UNICEF report on nutritional surveillance in Botswana.

After consultation with representatives of the Ministry of Health in Gaborone, Botswana, the consultant was instructed to focus on

- 1) the feasibility of linking the Botswana nutritional surveillance data with data from related ministries to form a drought warning and monitoring system and
- 2) to identify the information needs of the administrators of the current drought relief programme so that a warning system could be designed that would be useful in the management of the relief campaign.

APPENDIX II

CENSUS DATING FIGURE



Source: Central Statistics Office, Ministry of Finance and Development Planning, Census Administrative/Technical Report and National Statistical Tables, Gaborone, 1983.

APPENDIX III

Dependence on Food Aid: A Research Agenda

During the course of my consultancy, it has become apparent that there is considerable concern over what may be called the 'dependency' effects of the drought relief programme. There is evidence, albeit fragmentary and anecdotal, that the drought relief campaign has stimulated a high degree of dependency of the poor population on government services. One could argue that this is fine and well: people who are starving during a drought should be able to depend on the government to provide a reasonable measure of help. That is not at issue here. What is of concern is the possibility that large segments of the population are accepting the relief measures as permanent fixtures in their relationship with the government and are moulding their way of life around these support structures. This is best explained through example.

The health system is operating a feeding program for all under-five children, pregnant and lactating mothers, TB patients and in some cases, those individuals classified as destitute. On a clinic feeding day, a mother is provided with a ration for her children and herself, depending on her circumstances. The ration provides a supplement of approximately 500 calories a day and consists of maize meal or sorghum, vegetable oil and powdered milk. The amount given to the mother is adequate for a period of thirty days. This ration is provided to these individuals on the grounds that they are the most vulnerable to a shortage of food during a drought. However, Family Welfare Educators, nurses and physicians assert that the food is brought home, cooked in the family pot and shared, in the normal pattern, amongst all of the family members. There is little evidence that mothers specially prepare supplement meals for their undernourished children, although encouraged to by the clinic and health post staff. There is evidence that mothers depend on the clinics as a provider of free food. As has been demonstrated in nutritional surveillance reports, clinic attendance climbs by two to three hundred percent when food is available at the health point, and falls by just as much when the stores are empty. In fact, mothers are said to perceive of the health facility as simply a feeding point. From the opposite side of the fence, it has been argued that Family Welfare Educators and nurses are, to a greater and greater degree, depending on the provision of free food as an outreach device for their broader range of services. With the increased work load resulting from the food distribution, health professionals are said to be less able, and less enthusiastic, about the normal community outreach efforts and home visits.

This sense of dependency manifests itself on a broader macro-economic scale as well. In one district, it was estimated that the income from an average sized holding planted to sorghum, in a good year, would net the cultivator approximately P200. Were the same cultivator to participate in a labor based relief project at a site more than ten kilometers from his village, he would receive approximately P200 in wages, for the same period, plus a food allotment. Agriculture in Botswana is an undeniably risky business. The availability of a guaranteed 'relief' job may in-

duce those who would otherwise plow and till their lands to forgo it until a safer year. There are reports that in some remote villages, tribesmen sit and wait for the government food drop, rather than hunting game and collecting wild foods as they traditionally have. In other areas, people are said to be stopping their household production of crafts, because the government relief project job and the food aid provide them with all they need.

These examples underscore the potential danger that can arise when a relief program is considered as a normal part of the government's development agenda. The relief programme now is rather large, feeding roughly 45 percent of the population and providing employment to over 15,000 workers. The dangers are very real that these measures will be construed as a normal facet of the annual development routine simply because of the size of the beneficiary population. Important decisions on the scope of the relief effort and the selection of the proper vehicle for the transmission of aid hinge on the perceptions of the beneficiary population. If these measures are considered to be permanent institutions; if they act to create a false sense of expectations amongst the poor; if they do act to mitigate against self-help measures and the normal mode of economic production in the villages, then there is every reason to conclude that these measures are poorly designed and should be improved.

As mentioned above, there is no solid base of evidence on which to assess the dependency relations of the population on relief measures. A considerable snare of the dependency phenomena is attitudinal, hence making measurement particularly difficult. Nonetheless, a formal process of collecting and analyzing a set of field 'impressions' will undoubtedly yield much valuable information. If this research is to be of practical use, it must be well designed, timely and supported -- at least in theory -- by those ministries involved in the formulation of relief policies.

Research Hypothesis and Design

For best results, it appears wise to split the research into two components. The dependency effects should be divided into those factors relating to the various feeding programs and then those factors relating to broader changes in village economic organization. Within both of these components, various hypothesis should be tested. For the feeding/health side of the dependency examination, a partial set of research hypothesis would be as follows:

- a. Households have come to be dependent on food aid as a part of their total disposable income.
- b. Food rations are not targeted towards vulnerable group members.
- c. Households reduce their expenditure on foodstuffs after receiving aid.
- d. Mothers perceive that the primary role of the health points is as a feeding device.
- e. There has been a reduction in the time allotted to community outreach and home visits from health center personnel as a result of increased health center feeding activity.
- f. There is a low level of retention, and a low level of attention, granted to the educational messages given during the child feeding days.

- g. The school age population and their parents consider the hand-stamping programme as a part of the normal government development effort.

For the analysis of dependency in the broader social nexus, the hypothesis are fewer, but are invariably more complex:

- a. Self-help projects have been cancelled or delayed because villagers hope/expect to be paid for these efforts under the labor based relief projects.
- b. Ploughing and the maintenance of agricultural property has been delayed, deferred or bypassed due to the certainty of government relief employment.
- c. Traditional migration patterns have been disrupted due to the availability of in-village government employment.
- d. In remote areas, hunting and gathering activities have declined due to the provision of food rations and government assistance.
- e. The labor based relief projects are considered, by project participants, as likely to be permanent positions supplied by the government.

These two components tend to lend themselves to different forms of data collection. For the feeding-dependence component, a system of stratified sample surveys in selected regions of the nation would be most appropriate. Formal surveys could be conducted in health clinics, schools and private homes. The second component does not lend itself very well to a large-scale sample survey. A less structured sociological/anthropological form of investigation would be most appropriate for this form of assessment. It would be best to select areas of the nation rumoured to have changed their mode of subsistence as a result of the relief campaign and send in a team of sociologists and anthropologists to interview influential and knowledgeable members of the community. From this, a series of case-studies would be constructed so that the varied mechanisms for the development and diffusion of dependency, and the different forms this dependence takes, would be identified.

Research Schedule

If this research is to be useful to policy-makers it must be conducted and analyzed in a fairly short period of time. There is a very real trade-off between the statistical representativeness, comprehensiveness of the research and the time needed to complete the task. Given the need for a certain amount of analysis before the drought relief programme becomes a third-year activity, it would be best to aim for a fairly rapid research process. While it is difficult to foresee all of the possible bottlenecks to conducting such research at this point, a possible schedule is as follows:

- Month 1 -- Selection of survey teams, questionnaire development and pre-testing, sample selection and collection of relevant secondary material.
- Month 2 -- Week 1 - enumerator training and preparation for post-survey analysis. Weeks 2, 3, 4 - field work.
- Month 3 -- Weeks 1, 2, 3 - field work. Week 4 - coding and tabulation from surveys, initial assessment of sociological/anthropological interviews.

Month 4 -- Weeks 1, 2, 3 - data analysis and report production.
Week 4 - presentation and discussion of results.

For an issue as complex and illusory as dependence on relief, four months seems to be a suitable period of time. However, the survey period is certainly a function of the resources available for conducting the study and the breadth and depth of analysis desired.

Research Staffing

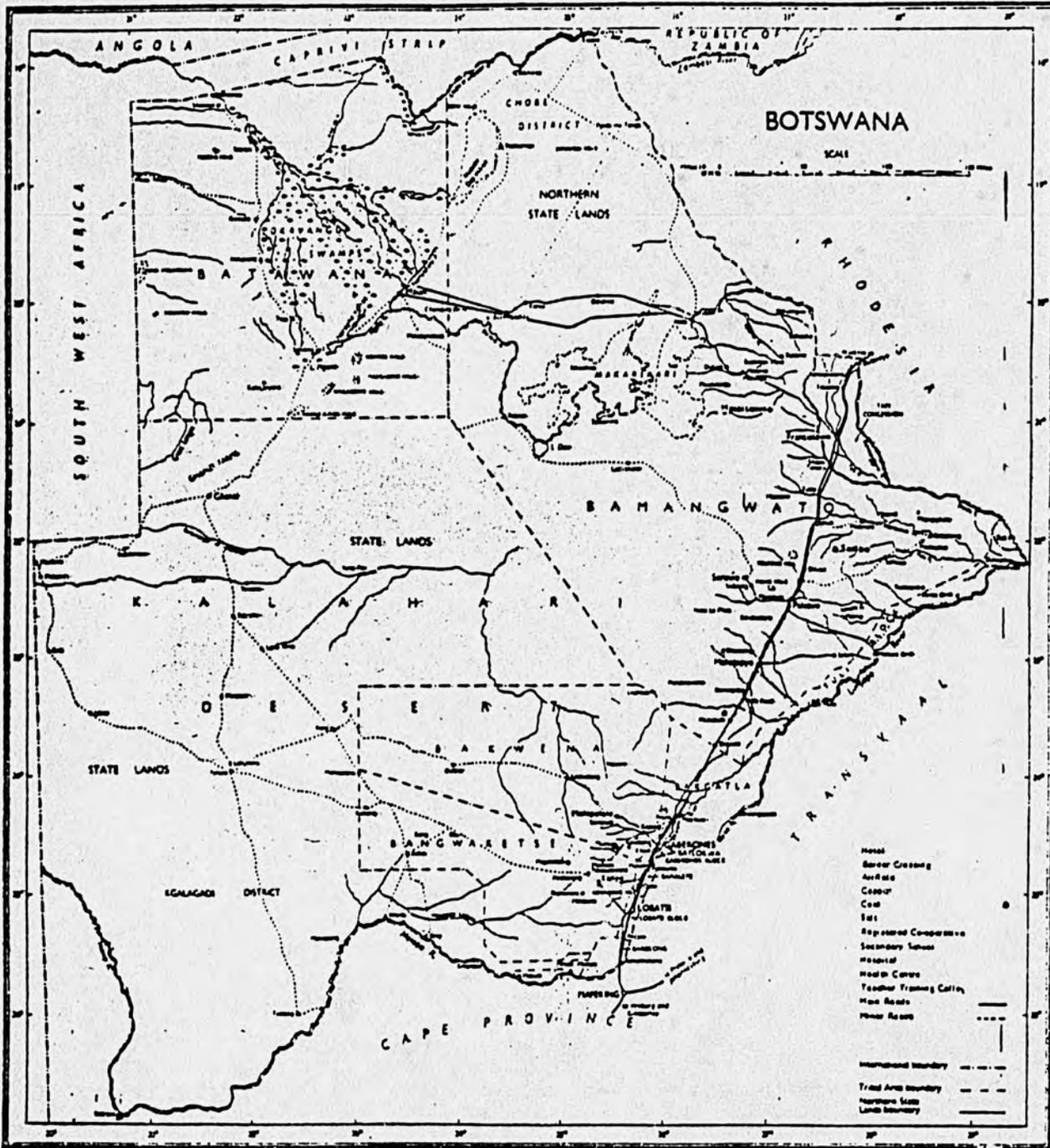
There are, at present, people working for the government of Botswana who would be capable of conducting and directing the aforementioned study. The choice between these individuals and the use of outside consultancy assistance is contingent on the availability of domestic personnel. Since this research is a short-term project, requiring the full time services of a research coordinator, it may be preferable to bring in a consultant as principal investigator.

If the research is to be successful --e.g. collect useful information that can feed into the drought management process-- then it is imperative that the responsibility for the research not to be concentrated in one ministry.

The Ministry of Health and the Ministry of Education would be the logical areas to locate the major executory responsibilities for the dependence-on-relief food component of the study. For the broader socio-economic dependence issue, it would be preferable to have the responsibility for this vested in the Ministry of Local Government and Lands, Ministry of Agriculture and, most likely, the University of Botswana. Overall responsibility for the research should lie with the Inter-Ministerial Drought Committee. It would be best if the Chairman and the Secretary of that Committee were either the principal investigators or the counterpart to a consultant assigned the principal investigator duties.

Drought relief has been declared by the President to be the government's top priority in the coming year. For many of those involved in the management of the relief effort, the day-to-day responsibilities of keeping the aid flowing are so great that there is little possibility for these individuals to evaluate their own projects. Accordingly, a high priority should be attached to inter-ministerial cooperation in staffing the research effort and to international assistance in the overall funding and staffing of this project.

APPENDIX 4.1



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