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CATTLE AND DEVELOPMENT IN WESTERN ZAMBIA*

by

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* This preliminary review of cattle and development in Western Province is part of an ongoing study of socio-economic aspects of cattle development policies in the province, which is being undertaken in conjunction with the Department of Veterinary and Tsetse Control Services.

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Adrian P Wood

Introduction

Western Province has the second largest cattle population in Zambia. In 1982 this exceeded 400,000 for the first time since records were first kept in the 1920s. The rate of growth of the herd (after offtake) has accelerated in recent years to 5.0 percent per annum between 1980 and 1984, the most rapid of any province. The Western Province cattle population represents some 24.5 percent of the country's communally herded cattle and the offtake accounts for 23.4 percent from this sub-sector (NG, 1984; 3). Cattle are particularly important in the monetized rural economy of the province, the value of commercial cattle sales being four times that of official crop sales (Abrahams, 1978, 1).

Cattle have been increasingly regarded as an important resource which should contribute to the 'development' of both the province and the nation. However, cattle development measures have not been particularly successful, and despite foreign assistance such initiatives faced major problems as the country adjusts to its difficult economic circumstances. While prospects for cattle development are bleak, the evolving crisis may provide an opportunity for re-orienting as well as re-organizing livestock development initiatives.

This paper reviews the economic and political development of Western Province, and considers the role of cattle in the rural economy. The contribution of cattle in the area's development experience is then considered, with particular attention to cattle development initiatives since independence. The paper concludes with a discussion of the

¹ A longer version of this paper with more historical material is published in J C Stone (ed) (1988) The Exploitation of Animals in Africa, Aberdeen University African Studies Group, Aberdeen.

problems which are currently faced in achieving an economically and ecologically viable approach to cattle development approach.

The Setting

The Western Province of Zambia, formerly known as Barotseland in colonial times and as Bulozhi before then, lies astride the upper reaches of the Zambezi River (see map). The province is part of the central African plateau lying at some 1050 m above sea level.

Except in the east (Koama District), the province is covered with deposits of Kalahari sands with limited agricultural potential. The focal area is the upper Zambezi flood plain, some 200 km from north to south and over 50 km at its widest. This flood plain and those of its tributary rivers provide good grazing for cattle from July to December. During the flood season (January to June) the cattle move onto the wooded interfluves where the grazing is much poorer, especially once the rains end in April. It is during these three months, while the cattle wait to return to the flood plains, that mortality, caused by a combination of poor nutrition, tick borne diseases and liver fluke infestation, is highest. The seasonal movement of cattle traditionally involves the relocation of whole communities, which temporarily abandon their mound villages in the plain. This pattern of transhumance has been formalised into the Ku-om-boka ceremony which forms a central part of the culture of the Lozi, the dominant ethnic group.

The major impact of the colonial period was the incorporation of Barotseland within the migrant labour system. From the early years of the century the Rhodesia Native Labour Bureau was recruiting within the protectorate and from the 1930s Wenela, the Witwatersrand Native Labour Association, developed a network of camps and roads to recruit labour for the gold

mines on the Rand. By the late 1940s some 50 percent of adult males eligible for tax were absent from the province (Peters, 1960, ix - x). The revenue which this produced allowed people to pay their hut taxes which produced a revenue well in excess of the administration's operational cost (van Horn, 1977, 159). Labour migration, however, also disrupted the flood plain agricultural system. With increasingly severe floods in the 1940s and 1950s, partly due to neglect of the indigenous system of drainage, the protectorate became increasingly dependent upon food imports. By independence (1964) these had reached some 80,000 bags (90 kg) of maize a year (Maclean, 1965, 17).

The orientation of Bartoseland's economy towards South Africa and Rhodesia, and the political friction caused by its leaders desire for independence outside Zambia were major concerns for the Zambian government in the early years after independence. Consequently several efforts have been made to try to integrate the province more closely into the Zambian economy. These efforts have included the banning of labour migration to South Africa and Rhodesia from 1965 and the completion in 1970 of the first all-weather road from Mongu (the provincial capital) to Lusaka. An abattoir was constructed in Mongu in 1975 to facilitate beef exports from the province, while several measures have been introduced since independence to encourage the progression of farmers from subsistence to semi-commercial production.

These initiatives have had little impact upon the overall standards of living and character of the rural economy, leaving Western Province one of the two poorest provinces in the country. Despite the expansion of semi-commercial maize production on the better soils in Kaoma District, the province continues to have a grain deficit, imports being around 20,000 bags a year in the early 1980s (NG, 1984: 3). Elsewhere agriculture is primarily subsistence oriented with fish and cattle sales providing cash for some households. Beer brewing

is an important source of cash for the poorer households, while government employment and remittances from urban employment provide an input of cash into the rural economy through the demand they finance.

In contrast to the colonial period when the province was on the whole a net source of revenue, since independence the province has become a drain on the Zambian economy. The expansion of free government services in health and education and provision of agricultural subsidies, combined with the abolition of direct taxation of most rural dwellers, has meant that government expenditure in Western Province now considerably exceeds the income received. Further, with few exports from the province to the national economy (apart from labour), little is contributed indirectly to the government revenue. This deficit situation was acceptable in the first decade of independence, when the national development strategy focused on the redistribution of copper revenues to the poorer parts of the country (Ollawa, 1978). However, since the 1974 copper price collapse, the situation has changed drastically. Subsidies are being reduced, charges introduced for government services, and provinces are expected to contribute a major portion of the sum they draw from the national exchequer (Wood, 1984 a). With its limited development resources Western Province faces a difficult future.

The Role of Cattle in the Economy and Society

Cattle have been kept on the upper Zambezi floodplain from at least the mid seventeenth century when the Lozi settled the area. Cattle numbers and their importance have increased over time as the herds of game have declined and as population growth has led to a reduction in the gathering of wild foods. The number of cattle kept increased considerably in the mid nineteenth century, when the Lozi were subjugated by the Kololo who brought large herds from the south. Further increases occurred during the late nineteenth century when the

Lozi state reached the height of its power and was able to obtain cattle from neighbouring tribes either through tribute or by raids.

The Lozi have an extensive vocabulary to describe cattle, their diseases and management practices. It has been argued that the Lozi involvement with cattle is so intensive that they form a core area of the culture, with related values and attitudes little altered from a century ago (Prins, 1980: 82, 105). Cattle fulfil a number of economic and social roles, contributing both directly and indirectly to production, providing a form of security, and helping cement social and political ties and fulfil obligations. The 'main fruits' of cattle are milk and manure (Ibid, p 81). Milk is one of the two major sources of relish preferred by the Lozi, the other being fish. (Meat is rarely eaten except in celebrations or when sick or injured cattle have to be slaughtered.) Manure is vital for cultivation of the Kalahari sands. As gardens on clay and peat soils in the flood plain have been increasingly abandoned for gardens on the more sandy interfluves, so manure has become increasingly important (Wood, 1978, 1985). This critical role of manure in cultivation, and its recognition by the Lozi who carefully move kraals and tethering sites to manure gardens, means that cattle are more closely integrated into the agricultural economy than in many other parts of Zambia. The link has been strengthened by the adoption of the plough since the early part of this century. Oxen are used for drawing sledges; this remains the major means for transporting bulky items in the villages to this day. The hiring of oxen for ploughing or transport also generate income.

While these production roles of cattle have been stressed by cattle keepers (Lutke-Entrup, 1971: 43), a recent survey which allowed wide-ranging discussion of the value of cattle suggested that the security provided by them is often perceived as their most important attribute (Beerling, 1987).

The feeling reported was that cattle 'help you out, when you are in problems', and that life without cattle is difficult and precarious. The problems which could be solved were divided into two groups: one being material needs, such as the purchase of food, payment of schooling costs, and payments to diviners and traditional doctors; the second being social problems or 'mistakes', where recompense is required with respect to adultery, injury, or accidental pregnancy. Cattle represent a good investment in unstable circumstances, with a return of up to ten percent, with protection against inflation, and with considerable income from 'use benefits'.

A recent attempt to quantify the average benefits per animal suggests that milk, sales, and ploughing are most important, with manure and transport of lesser importance (Baars and de Jong, 1989) (Table 1). However, natural increase was the largest benefit. Overall the average value of benefits was between 20 and 30% of the value of an animal.

Table 1. Benefits from Cattle*

Natural Increase	K	45.81
Milk/meat	K	43.04
Cattle Sales	K	38.22
Ploughing	K	35.60
Manure	K	11.09
Transport	K	5.16
Hides	K	0.19
Total	K	179.11

* Figures are average per animal. From a study of 51 herds, of average size 64 head.

The roles which cattle fulfil are also important for their owners. Cattle indicate economic power and social position, and are used to fulfil social obligations. Ownership of a large number is usually associated with a position of responsibility towards kinsfolk and the community. Through inheritance it is usual for the person who accedes to a position of responsibility, as head of the kin group or village, to receive the major share of the cattle left usually by their father. Such people are then expected to provide assistance to kinsfolk for whom they have responsibility whenever they are in need, and to provide economic stability for the community in times of hardship. People with sizeable herds (over 40 head) will also be expected to loan cattle to relatives to help them establish their own herds. They will also engage in long-term, mafissa, loans of cattle to non-relatives in order to assist such friends build up their herds, while gaining in return political support and security (from a spatially dispersed herd). Major cattle owners are also expected to provide a beast for slaughter at the funeral of an important member of their family or community. All cattle owners have a responsibility to help their sons (and perhaps nephews for owners of large herds) acquire cattle needed for the brideprice payment.

A recent study attempts to estimate the size of herd needed by a household to achieve three levels of living (Beerling, 1987, Appendix 6). Following the methods which Fielder (1973, 339) applied to the Ila in the early 1970s, this study found that a rural family would need 25 head of cattle as a minimum, and about 90 to live comfortably (see Table 2). Cattle are seen as an inter-generational resource and source of long-term family security which is temporarily in the care of specific individuals. Although individual rights to cattle are recognised, all owners of cattle are seen to be holding their inherited animals in trust for future generations of the family.

Table 2. Herd Sizes for Different Levels of Living*

<u>Use</u>	<u>Level of Living</u>		
	<u>Minimum</u>	<u>Medium</u>	<u>Comfortable</u>
Ploughing Team	4	4	4
Reserve Trained Oxen	-	2	4
Milking/Mature Cows	6	12	20
Non-milking Cows (Heifers)	2	5	20
Calves (under 2 years)	6	12	20
Breeding Bulls	1	1	3
Bridewealth Heifers	2	6	8
Bridewealth Young Bulls	1	3	4
Security	2	3	4
Funerals, obligations	1	2	3
	25	50	90

* Source: Beerling (1987)

This may be specifically recognised, where animals are given or allocated to children by their parents, or when bridewealth cattle are held in trust by parents for their daughter's children.

In a more general sense they are an inheritance like the family silver, but are, in addition, a major source of use benefits and recurrent income to their guardians. Any generation (or temporary owners in this family history sense) are free to benefit from the recurrent income from cattle, but have much less freedom in realizing the value of their capital assets.

Cattle Development Measures

a) The Colonial Period:

While some efforts were made by colonial services in the 1950s to reduce mortality and increase cattle sales, in general the

bulk of colonial development efforts in Barotseland were directed to agriculture in an attempt to raise crop production to self-sufficiency (Peters, 1960; Maclean, 1965). The colonial view of the Barotse cattle herd seems to have been ambiguous. Only limited efforts were made to encourage sales and there was no exploration of the potential positive impact upon agriculture which might have resulted had increased cattle sales permitted reduced labour migration. This colonial attitude probably stemmed from continued concern over disease risks, the area having a long history of foot and mouth as well as CBPP (contagious bovine pleuro-pneumonia) (Wood, 1984c), while the trek of up to 400 kms to the Livingstone abattoir made the marketing operations of the parastatal Cold Storage Board in this area relatively expensive. Further, while the country was not always self-sufficient in beef, the potential for increased production from European and African farmers nearer to the markets existed, while imports from Botswana and Southern Rhodesia could be financed by copper exports.

b) Post Independence

The government attitude to development in the peripheral areas, such as Western Province, altered radically with independence in 1964 (Wood, 1986a). Concentration of development initiatives in areas with the highest returns was no longer acceptable. The Humanist philosophy of the regime stressed the goal of providing equal economic opportunities for people wherever they lived so that a more even pattern of development would result. The government sought to integrate the peripheral areas into the Zambian economy and to reduce their dependence through labour migration upon the white-ruled countries to the south. Particular concern was expressed for peripheral areas where there was antipathy towards the government and where successionist feelings existed. Rapid economic development here was seen as vital for ensuring national unity.

New policies in support of these goals were introduced, aimed at encouraging farmers to become semi-commercial producers. National networks of crop collection depots and agricultural extension camps were established, while subsidies were provided for fertilizers and other inputs. Over a ten year period the country moved to a uniform crop pricing policy, with farmers in remote locations receiving a national price for their crop and the state subsidizing collection costs (Wood, 1986a). In the cattle sector the state sought to increase the offtake from the traditional herds to stem the rise in beef imports caused by a decline in production by large-scale commercial farms and rising urban demands (Lombard and Tweedie, 1972, 47). Veterinary services were expanded. Attempts were made to encourage a more commercial view of cattle among traditional farmers. The development scenario envisaged improved veterinary services reducing calf mortality and so producing higher rates of herd growth which in turn would allow greater sales.

Recognizing the limited agricultural potential of the Western Province outside Kaoma District, and the important potential contribution which the provincial herd could make in reducing the growing shortage of beef, the government directed the Cold Storage Board (CSB) to expand its operations once the all-weather road was completed in 1971 and funded the Board's construction of an abattoir in Mongu (completed in 1976). The province's veterinary services were expanded following a minor outbreak of CBPP in 1970. The Animal Husbandry Branch introduced the National Beef and Rural Milk Schemes to try to develop commercialised cattle owners to act as catalysts in changing traditional attitudes towards cattle. One particular constraint to cattle keeping, the flood season grazing shortage, was addressed through the summer grazing paddocks scheme. This provided managed grazing in selected areas of the uplands, often far from the flood plain (Abrahams, 1978, 10-12).

None of these schemes were particularly successful. They had very low levels of participation, weak extension and limited supervision (GRZ, 1982, 170). Perhaps their most crucial failing was the imposition of planners' goals and methods upon the cattle keepers without reference to their total situation. The grazing paddock scheme ignored the fact that cattle owners need to have access to some of their animals for milk during the flood season and also that they loan some cattle at this time of year to friends or relatives to fulfil social obligations. The beef and milk schemes neglected the roles which cattle fulfil in the society and the way in which these restrict commercialization.

Efforts to increase offtake from Western Province reached a peak in the mid 1970s with the opening of the abattoir, but thereafter there was a general run down in the level of services provided by government departments and the Cold Storage Board. This was caused by the world recession and especially the precipitate decline in the value of copper (Wood, 1984a). A nadir was reached in services to the cattle sector in Western Province in the early 1980s, when cash flow problems caused the Cold Storage Board to cut back its purchases of cattle, while at the same time the reduction in operating funds for the Veterinary Department had brought most routine services to a halt (NG, 1984: 7).

Fortunately it was at this time that the Netherlands' aid programme began to target its support to Zambia upon Western Province. By the mid 1980s three Dutch projects were operating for the benefit of the province's cattle (Wood, 1987). These were the Sikongo-Lueti Cattle Development Area in Kalabo District, the Cattle Disease Control Project which provided support for the Veterinary Department, and most recently the Senanga-West Cattle Development Area. The Netherlands and Finnish aid programmes have also provided support for the Western Province Co-operative Marketing Union, which since 1982 has been involved in cattle marketing. The

Union, in the short term, provides an alternative outlet to the Cold Storage Board. In the longer term, it is concerned with the development of primary co-operative societies which, like the crush pen groups in the Cattle Development Areas², will provide an organization basis for marketing and so stimulate more commercially minded attitudes among cattle keepers.

Response to Government Policies

Data concerning offtake is derived from a variety of sources. The most precise figures are for exports from the province, monitored by the Veterinary Department through its movement permits. Figures for local slaughter and sale are produced by the abattoir and urban butcheries. There are no records for village slaughter. Consequently an estimate is used for locally consumed offtake based on estimated beef consumption per head and population size. When offtake figures are standardised or converted to rates, data on the provincial herd has to be used. These are obtained from the Veterinary Department's annual cattle censuses. The censuses are of variable accuracy as they are not completely up-dated every year and estimates of growth used by field staff are often over optimistic. Any analysis of the herd size and offtake figures must be treated with caution.

In the first six years after independence offtake increased steadily. Exports from the province rose to an average of 1.8% of the herd, compared to 1.1% in the 1950s, and total estimated offtake at 5.1%, compared to 4.9% (Table 3). This increase in offtake was probably stimulated by increased demand from major urban areas, slightly higher prices, and more active purchasing by traders and the Cold Storage Board.

² The Cattle Development Areas have now been named Agricultural Development Areas in recognition of the important linkages between livestock and crops in rural development.

Table 3. Trends of Offtake and Herd Growth 1948-1985 (a)

	<u>Offtake</u> (percentage of herd)		<u>Herd Growth</u> (Annual Av Rate %)	
	<u>Exports</u> (b)	<u>Total</u> (c)	<u>Actual</u>	<u>Potential</u> (d)
1948-1953	1.1	4.9	2.4	8.3 (1960-63)
1965-1969	1.8	5.1	5.3	10.9
1970-1972	1.4	4.4	2.6	9.1
1973-1979	3.4	6.5	0.1	6.6
1980-1984	2.5 (e)	5.5 (e)	5.0	8.6 (e)

Notes:

- (a) Calculated from GRZ, 1982, p 201-202 with additions post 1980 from GRZ 1984 and personal communications from R C de Rooij.
- (b) Exports refers to cattle exported from the province to other parts of Zambia.
- (c) Total offtake is exports, and all forms of local consumption including butchery, abattoir and village slaughters.
- (d) Potential growth is calculated from herd growth plus all offtake in the given period. It gives an indication of herd growth in the absence of offtake, i.e. natural increase, but ignores the compound effect which would be created by the progeny of offtake.
- (e) Estimates.

The loss of income from labour migration and the relatively slow reorientation of out-migration for work to Zambian destinations (Wood 1982) may have also contributed because of a need for alternative sources of cash. However, this growing demand for cash would have been tempered by the removal of hut tax and by the introduction of free school and health services. The increased offtake at this time may also have

been encouraged by a higher rate of provincial herd growth, this increasing from a potential of approximately 8% in the 1950s to 11% between 1964 and 1969, with actual post sales growth rates rising from 2.4% to 5.3%.

This growth in offtake and the rise in the rate of growth of the provincial herd were reversed in the period 1970 to 1972, when an outbreak of CBPP affected the province. Exports fell to 1.4% and total offtake to 4.4%, while the herd growth rate after sales fell back abruptly to 2.6% per annum (perhaps partly due to more thorough livestock counts).

The trend towards increased offtake was re-established in the mid and late 1970s when a dramatic increase in exports occurred. This might be expected with the opening of the all-weather road, the Mongu abattoir, and with the increased activities by CSB. Once the restrictions on sales imposed in connection with CBPP outbreak were lifted, exports jumped to 17,000 head in 1973, and then averaged some 12,000 head a year (1973 to 1979), well above the previous peak of 8,000 (1969). Exports averaged 3.4% of the herd between 1973 and 1979, compared to 1.8% in the 1960s. Total offtake rose to 6.5%. This may have been the result of relatively favourable marketing conditions and also a result of increased cash needs as the new road improved the supply of consumer items, while rural-urban terms of trade moved against rural producers requiring them to sell more produce (ILO, 1981). Labour migration also increased in the 1970s, but in a different form to that before independence with more permanent out-migration and less remittance of funds to the extended family remaining at home. This migration has caused the rural population of Western Province to become increasingly aged and imbalanced in favour of women. This may have necessitated cattle sales to finance the purchase of food. A further change in the 1970s was the development of supplementary charges associated with schooling (for uniforms and school fund payments) which led to increased cash demands. By the late 1970s, school costs had

become one of the major reasons reported for the sale of animals.

The increased offtake in the 1970s seems to have been primarily generated by demands for money and improved marketing facilities, as there is no evidence of a rapid rate of growth in the provincial herd. In fact it appears the herd's rate of growth 1973 - 1979 slowed to an average of only 0.1% per annum after sales, and a potential of only 6.6%, well below the pre-independence level. Cattle owners were at that time prepared to convert almost all the annual increment of their herds into cash through sales. This much reduced rate of growth of the provincial herd has been explained by its changing structure (with an increase in the bull-cow ratio due to growing sales of cows and a trend towards a more aged cow population) (GRZ, 1982, 203, 183), the declining veterinary services (NG 1984, 7), and rising floods (Wood, 1978).

The early 1980s saw a further change in offtake and herd growth rates. Dutch support from 1982 led to a revival in the Veterinary Department's services for cattle owners. The province had the largest number of Veterinary Officers ever, while transport, provisions and funds for drugs led to high levels of activity and supervision. This improvement in services is probably a major cause of the increased potential rate of growth of the provincial herd in the 1980s, but lower floods and a reduction in the number of aged and unproductive cows have also contributed. A further important influence on the actual rate of growth has been a marked decline in offtake in the early 1980s. From late 1979 until 1982, cash flow difficulties forced the Cold Storage Board to cut back on its purchases. At the same time the utility of cash from cattle sales was reduced by declining availability of commodities in the rural areas (Wood, 1984a). The disruption of marketing has been reduced in recent years by brief influxes of private buyers when disease control regulations have cut off other communal grazing areas, and more importantly by the cattle

purchasing activities of the Western Province Co-operative Marketing Union (WPCMU) since 1982. Nonetheless it has proved difficult to achieve offtake volumes similar to those in the late 1970s; even when these are achieved their rates are well below those in the 1970s due to the currently larger herd size. The overall result has been a 5% annual increase in the provincial herd from 390,000 in 1980 to 471,000 in 1984 and growing concern over its ecological consequences.

Current Problems

In the late 1980s two major problems concern cattle development planners in Western Province. One is the balancing of offtake and growth to ensure a relatively slow growth in the provincial herd which will not threaten the province's natural resource base. The second is the financing of veterinary services once the Netherlands' aid programmes withdraw.

a) Ecological Balance and Cattle Sales

At present there is no accurate estimate of the cattle carrying capacity of the province under current management practices and there is some debate whether overgrazing is a serious danger. Flood season grazing is the critical limitation. Increased mortality at this time of year will occur if the cattle population exceeds the grazing resources available. Some adjustment in the distribution of animals during this season, or on a long-term basis through loans, may occur as local grazing shortages develop. Further, even where overgrazing occurs, it is unlikely to have the same consequences as in other parts of the country, the Kalahari sands are probably less prone to erosion while vegetation regeneration is facilitated by the deep rooting characteristics of many plants. Nonetheless it is desirable that the cattle population does not outstrip the grazing resources and lead to serious seasonal mortality and under-

nutrition which could result in major disease outbreaks.

Attempts are being made to improve cattle marketing to facilitate increased offtake to match the rate of growth of the herd. The most important of these initiatives is that by WPCMU and the CDAs where primary societies and crush pen groups respectively are being encouraged to facilitate marketing. In both cases it is hoped that the groupings will also provide outlets for the sale of drugs and other inputs, as well as arranging sales days and communicating with Union buyers. In the case of primary societies, consumer good retail activities will be undertaken which may help encourage cattle sales by spatially linking cattle marketing and commodity purchases, as occurred with the major private traders' shops in the colonial period (Wood, 1984b). Attempts are also being made to decentralize the CSB which would reduce the negative impact of cash-flow problems elsewhere in the organization upon the more viable operations in Western Province. Wider use of CSB's abattoir in Mongu would help the viability of the local organization. If service facilities were available there to private traders from outside the province, this would encourage them to purchase more regularly in the area.

While some observers expect improved marketing services to achieve increased offtake, it should be noted that Western Province has not achieved offtake levels comparable to those in other communal herding areas of the country. The province has 27.6% of the communally herded cows but on average during the 1970s contributed only 23.4% of the offtake from this sector despite favourable marketing conditions (N.G., 1984, 3). Even once marketing facilities are improved, and any backlog in sales is cleared, offtake levels may settle at rates below the potential growth rate of the herd under good veterinary services, and so lead to continued increases in the provincial herd.

Possible causes for this low offtake rate even under favourable marketing and 'cash-need' conditions are numerous and complex (Wood, 1986b). They include herding and loaning arrangements which deny a cattle owner direct access to all his/her cattle at some times of the year, and to some of them for several years (due to mafissa loans). Inherited cattle awaiting division among heirs (which can take several years), cattle allocated to children, bridewealth cattle, and cattle with particular economic functions in the household economy are also normally excluded from sale. The inter-generational aspect of inherited cattle also militates against sales. This responsibility is reinforced by likute, which is the requirement to discuss major decisions, such as cattle sales, with elders and relatives. In such discussions attempts will be made to prevent the sale of cattle, with alternative ways of raising the required cash suggested (Beerling, 1987). Finally it will be recalled from the earlier discussion that the use values of cattle are considerable and are generally seen to outweigh the beef value realised through sale, while target herd levels in order for a household to live 'comfortably' are in the order of 90 head. Increased inflation in the national currency may also encourage families to hold their assets in cattle rather than in cash. Consequently cattle are only sold when there is a desperate need for cash, and most cattle owners prefer to benefit from the cattle development services by accumulating animals to more adequately meet their long term needs.

While these characteristics of Lozi society suggest that it will continue to be difficult to raise offtake levels, the deteriorating economic situation in the country does hold some favourable prospects in this respect. The introduction of fees for secondary schooling and the proposed charges for other government services will increase the demand for cash. With reduced urban employment, as a result of both the recession and the streamlining of industries and government administration, urban sources of cash, either directly through

employment and remittances or indirectly through beer brewing and other services, will be reduced, making it necessary to look to the rural sector for the required funds. It thus seems likely that cattle will become an increasingly important source of cash and that the growing demand for money will increase the offtake level.

If this scenario does develop, other constraints may then appear in cattle marketing. These could include the Veterinary Department's regulations which require pregnancy testing of all cows offered for slaughter, and the various CBPP control regulations which discourage private traders from operating in the province. Further questions remain over the level of demand for beef in the urban centres. With the present restructuring of the Zambian economy, urban incomes are falling in real terms and it may be that the urban population will also decline somewhat. These trends suggest that beef demand will fall and that in order to maintain an adequate market and acceptable price, external markets will need to be sought.

A further initiative to facilitate increased offtake would be to investigate ways in which the minimum target herd size could be reduced. This would require a reorientation of cattle development policies away from a predominantly offtake goal, which primarily seeks to meet national development targets and consumption needs, towards a focus upon the wider range of needs of cattle owners. A move in this direction has been made in Provincial Medium Term Development Plan (G.R.Z., 1986) which has introduced improved access to draught power as one goal for cattle development policies. However, much more can be done to identify specific problems which farmers face in meeting their goals with respect to cattle. Once these goals are more fully understood it may then be possible to discuss ways of achieving them with less cattle per household, e.g. through the use of cows for ploughing, and so to help lower the target herd size needed for a minimum standard of

living.

b) Veterinary Service Financing

With respect to the financing of veterinary services, there are also many questions. The government continues to run a major budget deficit despite several years of progressive cutbacks in operating expenses and staffing (in response to pressures from donors and the IMF). It is likely that there will be continuing renewed pressures for government services to be made self-financing, or at least less of a burden on the budget. Since 1984 the Veterinary Department has recognised that in the difficult economic situation its free services to a particularly favoured section of the population could not longer be justified, and that a move towards charges would be necessary (van Lambalgen, 1985). Already in most parts of the country veterinary drugs have to be purchased by farmers, although veterinary services and statutory vaccinations are still provided free. In future some of the service and administrative costs will have to be met through charges levied directly or indirectly upon cattle owners. Whichever method is used, an appropriate level of offtake must be achieved in order to provide cattle owners with sufficient cash or the provincial authorities with an adequate throughput to keep the percentage of cash income spent on services, or the size of the levy (and its consequent impact upon the price) to a minimum.

The future organization of veterinary services is still under discussion. One proposal is that the present structure may be maintained with some trimming of staff and services. A levy on sales together with charges for movement permits could be used to raise revenue. An alternative would be to privatize field veterinary service, with veterinary assistants receiving no government salary but instead charging for their services and being hired by the Veterinary Department when vaccination campaigns take place. A further alternative might be to

disband the present network of assistants and establish a service along the lines of the primary health care programme, with village crush pen groups and primary cooperative societies supporting part-time veterinary workers through their own contributions. These workers would be supervised by a much smaller number of veterinary supervisors, funded either by the government's levies, or by charges raised through the veterinary workers.

The reorganization of the Veterinary Department provides an opportunity to adjust services to match more closely the needs of cattle owners. Under the privatization proposal, apart from statutory vaccination programmes and the administration of veterinary health regulations, the services provided to cattle owners would be only those which they value sufficiently to pay for. Little information exists on farmers' attitudes to veterinary services as these have been provided to date on the basis of what professionals felt would be suitable, rather than on the basis of what cattle owners themselves requested. The information which does exist on this matter suggests that such services are only valued where they prevent mortality or raise fertility. Other services which improve health and raise the quality of cattle are generally not perceived as particularly useful (Wood, 1985).

A change to direct payments for services as well as drugs would probably lead to a decline in the use of available veterinary services. If this continued, mortality would rise in the medium term lowering the rate of herd growth and probably also offtake. Alternatively, growing demands for cash might encourage cattle owners to reconsider the value of other veterinary services in the medium term as they seek to increase the rate of growth of their herds and the levels of offtake. Such a move might be stimulated by the privatised veterinary workers if they engage in educational and extension efforts to increase demands for their services.

The uncertain future of the Veterinary Department makes it seem inappropriate for the Netherlands to be funding a major upgrading of the Department's services, especially since the running costs of the improved service are estimated to be 60% above current costs. However, the improved knowledge of disease dynamics obtained from the disease control project should be of value in designing alternative, low-cost organizational forms for the Veterinary Department. These will ensure that better levels of disease control are achieved despite reduced funding in the future. The Netherlands' aid should also be used to design and evaluate these alternative organizational forms for the Veterinary Department.

Finally it may be suggested that the present Netherlands' involvement in both the animal husbandry activities of the Department of Agriculture (through the Cattle Development Areas) and in the Veterinary Department (through the Disease Control Project) provides an important opportunity for an integration of these two aspects of cattle development which were separated at independence. It is becoming increasingly clear to development planners that an integrated view of cattle in the rural economy is needed to design a viable cattle development policy. The village level circumstances of cattle keepers, such as their need for cash, and the goals which households seek through cattle production must be more carefully investigated. These form key inputs into policy development and must be recognised as being just as important as beef offtake needs.

Prospects

With the current restructuring of the Zambian economy towards agriculture, cattle are going to be seen as an increasingly important national resource. The government will probably try to encourage higher levels of offtake in order to develop beef exports to replace foreign exchange earnings from copper, while at the same time it will place an increasing financial

burden upon cattle owners for support of the veterinary and animal husbandry services required to produce this offtake and to meet export regulations. Cattle owners, on the other hand, will find their needs for cash increasing as charges are introduced on government services. They will require adequate growth in their herds which will allow them to make sales to earn this cash and also allow them to meet their other goals. While cash needs will be a critical stimulus to sales by cattle owners, two aspect of cattle development policy may facilitate this. One is the reorganization of veterinary services in order to ensure that as funds decline the protection of animal health is maintained and the rate of growth of the herd does not fall. The second is the development of initiatives in animal husbandry to improve the utilization of the current herd in meeting the needs of cattle owners, and so to facilitate a lowering of the minimum target herd size of households. Initiatives in these areas are crucial if future cattle development policy in western Zambia is to be successful in meeting both the needs of the nation and those of the cattle owners.³

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