

**CHANGES IN THE LIVESTOCK SECTOR
IN ZIMBABWE FOLLOWING LAND REFORM:
THE CASE OF MASVINGO PROVINCE**

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Part I: context and background

1. Introduction

Major changes have occurred in the livestock sector in Zimbabwe in the last few years. The land reform from 2000, combined with major changes in the macro-economy, has resulted in significant shifts in ownership, use and management of livestock, with implications for disease management, marketing and production. This report offers an assessment of these changes in one province – Masvingo – based on a series of local level case studies. The report asks, given the changes that have occurred, what makes sense in terms of practical and policy support to allow the livestock sector in Masvingo province and beyond to contribute to rural livelihoods and the national economy. Given the new contexts, the research asked:

- What is the way forward for the Zimbabwean livestock sector?
- What are the implications of recent changes for research and extension priorities in the livestock sector?
- How do livestock service providers best engage with their new clients?
- What are the implications for neighbouring countries?

With such a massively changed context for livestock policy, the key question is whether the best response is to aim for a return to earlier policy models, or rethink things radically. For example, Zimbabwean veterinary services and livestock market development have long been geared towards a commercialised, export-oriented industry with a strict regime in place to minimise Foot and Mouth Disease (FMD) and safeguard exports to the EU (e.g. fencing, zonation, vaccination and movement controls). But is this policy approach appropriate today? And does such a focus provide the opportunities for poverty reduction for the parallel smallholder livestock sector? Given current conditions, is the re-imposition of a strict veterinary regime (including a massive fencing and vaccination programme, movement controls, culling of buffalo etc.), together with an export-oriented marketing system, either feasible or desirable?

Answers to questions such as these will be critical in the establishing a policy framework for the livestock sector following the major land reform initiatives in the past few years. Yet, very little is known about the status and trends of livestock populations and their management in recent years, either in the communal areas or the new resettlement areas (either A1 or A2). This research begins to piece together a preliminary understanding of what is going on, and with what implications.

The research was undertaken during 2005 led by a field team based in Masvingo, Ngundu and Chikombedzi and supported by researchers from the Institute of Development Studies, University of Sussex. The research focused in particular on cattle and smallstock. Due to limitations of time, the study did not encompass poultry, pigs and dairy issues. The focus of this report is on uncovering the emerging and complex empirical realities on the ground, and identifying choices, trade-offs and options for the future. The hope is that it will contribute in a small way to future thinking on livestock and veterinary policy in Zimbabwe in the future.

2. Policy debates

Global priorities

For many years African livestock production – and indeed agriculture more generally – was seen as a poor investment for development. Assumptions about low productivity, backward management systems, lack of market orientation and poor growth potentials, consigned the livestock sector to the side-lines. But after years of being ignored, livestock issues are firmly back on the development agenda. In Zimbabwe, the reorganisation of the technical departments of the Ministry of Agriculture has created a Livestock Production Department alongside the Veterinary Department. This works together with the crop-oriented focus of the Department of Agricultural Research and Extension (AREX) and the wider policy remit of the ministry. Livestock are again being recognised as essential assets for livelihoods: as key to moving out of poverty; as a way into lucrative markets; as a source of foreign exchange; as well as important cultural resources, social safety nets and means of saving. These are of course not new findings, and indeed much work in Zimbabwe and beyond highlighted just these points, rejecting earlier misconceptions about livestock production and the notion of the 'cattle complex' (Mtetwa, 1978; Scoones and Wilson, 1988; Scoones, 1992; Barrett, 1992).

Today, however, a new 'livestock revolution', fuelled by a massive growth in global demand for food of animal origin (milk, meat, eggs) (Delgado et al. 1999; Rosegrant et al. 2001), is being hailed, with important development implications for Africa. It is argued that Africa can and should capitalise on its enormous wealth in livestock, gain access to new markets opening up in Asia and particularly the relatively affluent and nearby Middle East, and expand exports to Europe and North America. This could be the key to the much-needed growth impetus for stagnating agricultural economies. In its flagship Comprehensive Africa Agriculture Development Programme (CAADP), the New Partnership for African Development (NEPAD) argues for investments in rural infrastructure to underpin market access and the sustainable development of livestock resources. In this context, the African Union describes livestock as a 'sunrise sector'.¹

More specific assessments of the African livestock sector have highlighted the need for a pro-poor livestock development focus (Perry et al., 2002; Hall et al., 2004; Heffernan et al., 2003) – relating to the increasing emphasis on the role of greater market access for agricultural products from the developing world as a pathway out of poverty (Perry et al., 2005). A number of initiatives have been spawned in the last few years. For example, FAO is lead organisation for the Pro-Poor Livestock Facility that aims to facilitate the formulation and implementation of policies and institutional changes that have a positive impact on the livelihoods of poor livestock-owners. In parallel, the World Bank – together with the World Animal Health Organisation (OIE) and the FAO – has launched the African Livestock Programme (ALive) which is geared at promoting animal health both for the reduction of poverty and for the facilitation of regional and international trade of animals and animal products produced in Africa. This is linked in turn to a major effort to control and eradicate major diseases through the OIE-FAO Global Framework for Transboundary Animal Disease Programme (GF-TADS) set up in 2004.²

¹ Commission for Africa at www.commissionforafrica.org; DFID agricultural strategy at http://dfid-agriculture-consultation.nri.org/launchpapers/NewAgricPolicyPaper_draft08_05.doc; CAADP at www.nepad.org/2005/files/caadp.php and AU/IBAR. 'Africa needs animals.' Policy Briefing Paper No. 1, at www.community.eldis.org

² <http://www.fao.org/newsroom/en/news/2004/43252/>

National policies and strategies

Building on earlier policy statements (e.g. Government of Zimbabwe, 1992) and reviews (e.g. Perry et al, 2003), there has been a flurry of recent efforts in Zimbabwe to provide a policy framework for the livestock sector emerging from different quarters. Here we highlight four documents that have been tabled in the last couple of years. First, the national livestock policy which emerged from consultations within the livestock industry in October 2004. Second, the 2005 document on rebuilding the national beef herd emerging from the Commercial Farmers' Union. Third, a specific CFU proposal for sustainable agriculture centrally involving livestock for Masvingo province. And fourth a biosphere reserve proposal, building on the Great Limpopo Transfrontier Park, for the south-east of the country.

All in different ways pick up on the policy positions articulated in global and Africa-wide proposals outlined above. There have been few specific recommendations that have emerged from the small-scale communal sector, and no Zimbabwe Farmers' Union proposals specific to livestock for example could be located, although concerns of communal area production systems are emphasised in the national policy document. The bias across these proposals is, as in the past, towards commercial production systems, formal marketing and conventional mechanisms for disease control. The advocacy of a wildlife-oriented approach provides an additional dimension, one that has been central to debates about the future of livestock production, particularly in the drier areas of the country, for many years (cf. Dasmann and Mossman, 1961; Child, 1988; Cumming, 1990).

The following sections highlight some of the central recommendations of these policy documents.

1. *National livestock policy document* (October 2004: 14-15)

- Small holder farmers must become more commercialised and become progressive livestock farmers rather than livestock keepers.
- The Cold Storage Company should return to become the major processor of livestock in order to fully utilise the vast infrastructure which it has developed over the years.
- There is enormous potential to increase value added processing of livestock products much of which can be exported within the region or to more lucrative markets of the world. New non traditional markets must be exploited.
- High standards of on - farm animal management, animal health controls and veterinary public health measures must be maintained which fulfil the requirements of importing countries.

2. *Rebuilding and redistribution of national beef and dairy herd* (July 2005)

Exports of beef and value added beef products should be enhanced. In order to reach sophisticated markets, food safety measures from conception to consumption must be ensured. This can only be achieved by strong regulatory controls and implementation of international standards regarding animal health. This requires that foot and mouth diseases be effectively controlled. Trade strategies that give wider market access need to be developed.

Provide sufficient long-term concessionary finance for beef producers to purchase breeding stock and ancillary beef husbandry inputs i.e. fencing, deep tanks, drugs and vaccines.

3. *CFU discussion paper for RBZ – way forward for sustainable agriculture in Masvingo province* (June 2005)

With the right environment, incentives and support structures, the small-holder sub-sector can be used to launch the rehabilitation of the commercial beef producing sub-sector. This will benefit all parties by stabilizing prices for small-holder farmers, improving the off-take of beef considerably, begin the process of restoring Zimbabwe's beef exports after three years (and the prospect of earning US\$50 - 60 million per annum), and revitalizing the support structures/industries within the beef sector.

4. *Biosphere reserve* (Du Toit, 2005: 109-111)

The development of a Lowveld Biosphere Programme, with international technical and funding support, would help to rehabilitate the economy of this region and to provide a conducive environment for the long-term conservation of black rhinos and other flagship species.

Veterinary control fencing will have to be replaced as soon as possible to regain beef export markets (notably in the EU), and cattle movements once again strictly controlled. One consideration in planning for the fencing to be rebuilt is whether it should follow the previous alignment or whether new circumstances suggest the need for a different alignment, expanding the "FMD zone." Expanding the defined "FMD zone" need not significantly disrupt the present patterns of cattle production within the southeastern Lowveld.

A number of key assumptions emerge across these documents (with different emphases and nuances of course between them). Strongly emphasised is a particular future for the livestock sector centred on a revitalisation of the commercial beef sector. Key assumptions across these documents include:

- The need to resuscitate the beef/dairy industry, with livestock production being seen very much as beef/milk production from cattle. There is only passing mention of other uses of livestock and other species. As in previous policy documents for the dryland areas at least, livestock is seen as synonymous with beef. And given the collapse in the commercial sector due to land reform the pressing need now, some argue, is to ensure that new commercial entrants (A2) and communal and A1 resettlement farmers engage in commercial beef production to meet assumed national and international market demand.
- Exports of beef are seen as a central objective in order to capture the full value of the commodity. The traditional export route to the EU is seen as the major target, although alternative export markets (including Malaysia and North Africa) are mentioned. Sanitary and phytosanitary (SPS) requirements are recognised as a challenge, but the assumed success of the beef industry in the 1990s is pointed to as something that has already been achieved and, with the right support, could be attained again.
- Investing in export quality abattoirs and rehabilitating the Cold Storage Company's capacity is seen as a critical part of this strategy, and assumes that the CSC can under new conditions operate as a viable commercial concern despite its financial difficulties over many decades (indeed since its establishment in 1937).

- Disease control, particularly of diseases that inhibit exports (notably FMD), is seen as a central plank of any policy. Reinstating movement control, dipping regimes and veterinary support at a local level is seen as essential. This assumes that government resources (for staff costs, transport, drugs and vaccines, for example) can be mobilised at sufficient levels for such an effort, and that the difficulties of surveillance and control which have increased due to land reform can be overcome.

While there are of course debates about the details of any of these areas for investment and support, the general direction of current policy statements from a diversity of commentators is clear. Based on field-level data from Masvingo province, this report asks whether these assumptions can be upheld given current and likely future conditions, and whether such approaches are necessarily the most effective route to meeting the widely agreed ultimate goals of reducing poverty, improving livelihoods and revitalising the ailing agricultural economy in Zimbabwe.

3. Contexts

Before turning to the contemporary setting, it is important to put the current debate about policy directions into historical context, both at national and provincial levels. For the debates being had now in policy circles are by no means new ones. Indeed, the history of Zimbabwe since colonial conquest is littered with examples of policies that have attempted to improve the livestock sector, both commercial and communal.

Through the early parts of the twentieth century the national herd grew significantly, recovering from the decimation caused by rinderpest between 1896 and 1898. The white-owned commercial herd, for example, grew from 39,000 in 1907 to 954,000 in 1931, while African-owned herds grew from 164,000 to 1.63 million over the same period (Mosley 1983). However the beef industry never took off in a big way. A lack of capital, recurrent disease and poor market infrastructure hampered its growth. Numerous incentives through a series of 'Beef Control Acts' were offered which subsidised white producers, taxed African cattle producers and restricted the access to local markets for African cattle through strict quarantine measures (Samasuwo, 2003). Early attempts to get coordinated marketing off the ground through local investments failed, with initiatives quickly folding (Phimister, 1978). Later, the government made agreements with the Imperial Cold Storage Company (for export of chilled and frozen meats) and with Leibigs (for a 'meat extract' factory) in attempts to boost the industry's prospects. However, through the 1930s, following a Foot and Mouth Disease outbreak, and in the face of Argentine competition, depressed economies worldwide and poor efficiency and quality, the Rhodesian beef industry continued to flounder.

Following a series of enquiries and much debate, the government decided to intervene to rescue in particular the struggling small-scale commercial beef producers. In 1937 it assumed ownership and management of the ISC's facilities – and the Cold Storage Commission was established as a public body which aimed at galvanising the beef industry and providing price guarantees for white producers of beef. Until the 1990s, the CSC became a virtual monopoly player in beef marketing, both for domestic and export markets (Mlambo, 1996). By fixing prices, stipulating grading systems and overseeing marketing, the CSC had a huge influence in structuring the beef industry and livestock production more generally for the best part of 50 years.

This focus on beef cattle came to dominate thinking about livestock production, with research efforts concentrated on breed and fodder improvement and stocking rate trials to

maximise beef production (Weinmann, 1972, 1975; Tawonezwi, 1994)³; and attempts made continuously to encourage communal area cattle owners to increase offtake and enter the market too.⁴ The Department of Veterinary Services was also geared primarily to the commercial beef sector – and thus devoted much attention to combating FMD – a disease of key economic importance given its prejudicial impact on exports. The very high disease control costs were regarded as justifiable to protect these valuable beef export markets.

Since Zimbabwean independence in 1980 three broad periods for the beef industry can be identified, each characterised by a different commodity chain, with different players and different forms of transaction. The following sections highlight the differences in production, processing and marketing across the periods.

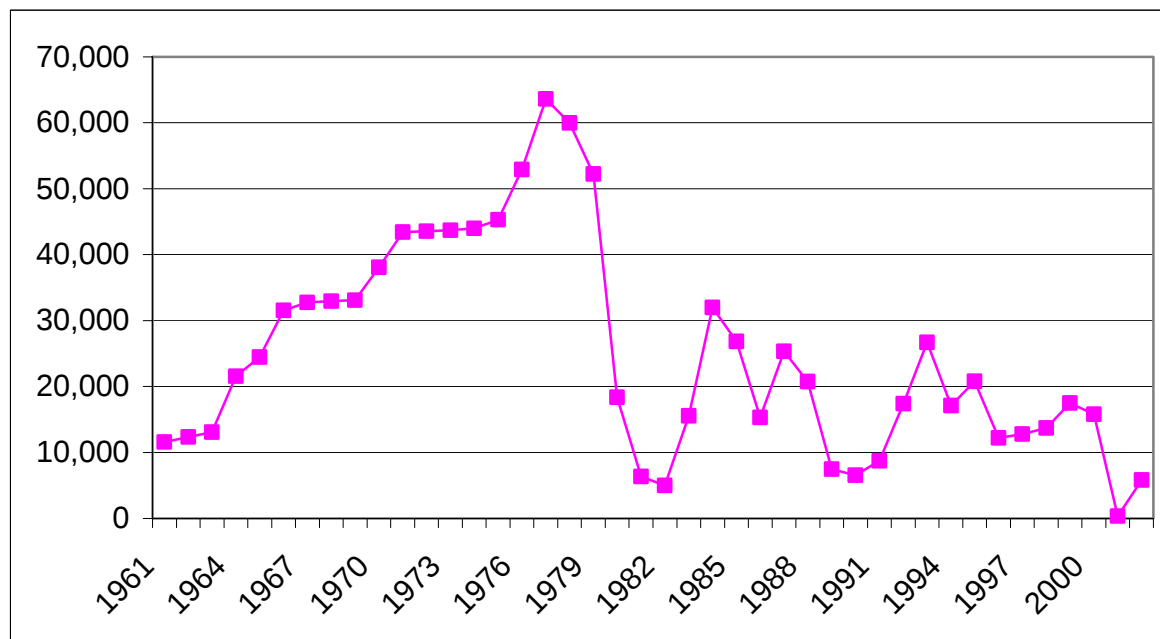
Changes in the beef industry: three phases since Independence

Pre-1985

In the period before 1985, the beef industry was focused on the commercial sector located primarily in the drier regions of the country. Most animals were finished off grass, with some movement from the lowveld to higher rainfall areas such as around Chatsworth during the dry season. A network of feedlots was critical in moving animals between different locations. Virtually all beef of all grades were passed through the Cold Storage Commission which operated five major abattoirs as well as a network of cold stores and distribution depots.

Total bovine meat exports had steadily risen in the 1960s and 1970s (see Figure 1a). In the late 1970s the liberation war and Independence curtailed exports to apartheid South Africa and total meat exports dramatically declined.

Figure 1a: Zimbabwe bovine meat exports (tonnes) 1961-2002 (Source FAOSTAT)

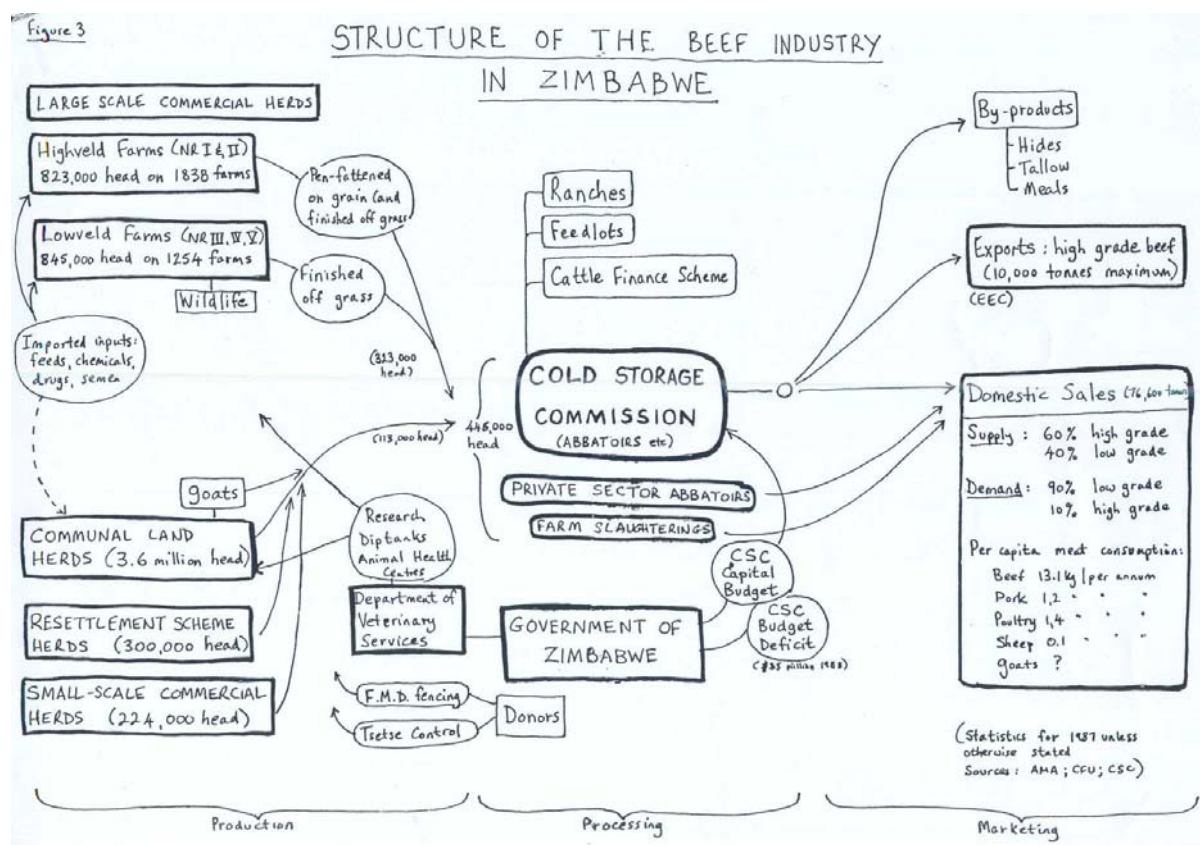


³ See for example the research reported in the Rhodesian Agricultural Journal – for example, Romyn and Murray (1938); Romyn (1935); Anon (1924)

⁴ See for example the Godlonton Commission on 'Native Production and Trade' of 1944 and the 1992 Government of Zimbabwe Livestock Policy. Both argue along remarkably similar lines.

By 1985 the communal, resettlement and small-scale herd stood at 3,409,000, with offtake between 1% and 3%). Again much of this was sold to the CSC at guaranteed prices through an auction system, although a certain proportion, especially of diseased animals, was sold locally within the rural areas. Exports were 31,978 tonnes in 1985 (the non-EU export figures were 14,247 tonnes - see Perry et al, 2003: Appendix 5), the majority of beef was however for local consumption, with demand being focused on lower grades.

Figure 1b: Structure of the beef industry, 1980s (Source: Cousins, 1990)



This commodity value chain (Figure 1b) was not hugely different from the pre-Independence period in many ways. With the cessation of the war and the lifting of sanctions the commercial beef sector bounced back. The post-Independence government support services continued to provide major backing to the largely white-owned commercial sector. A CFU paper produced in 1988 commented that the market is:

...dominated by low income consumers who are very sensitive to price changes, with a consequential highly elastic demand for a beef and a surplus of high quality beef on the internal market. The domestic market is therefore not in a position to support incentive prices to beef producers in order to maintain the more intensive high input systems of production required to produce high quality beef (CFU 1988: 7, quoted by Cousins, 1990: 56).

For a time government subsidies kept the industry afloat. With major post-independence hikes in producer prices (in the order of 60%), government offered significant price incentives to the commercial beef producer. The major droughts of 1982-84 were a setback, resulting in substantial destocking of the commercial herd. Most agreed that the beef industry could not survive in its current form. The 1983 Annual Report of the Director of

Veterinary Services concluded; “The future of the commercial beef industry therefore depends vitally on gaining EEC acceptance of our surplus high grade beef” (GoZ, 1983: 4).

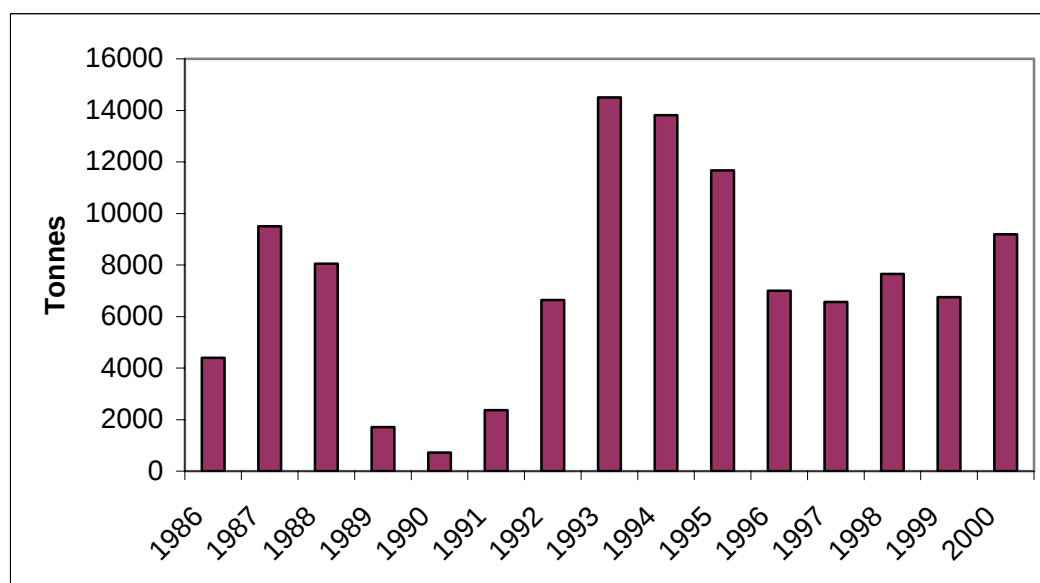
With a major policy focus on retaining the commercial beef herd, the CSC was seen as key in providing a continued subsidy and support role. While Zimbabwean consumers continued to purchase beef in far higher quantities than elsewhere (around 80% of all meat purchases), the demand, as acknowledged by the CFU, was for low grade, cheap cuts. Without a booming export market the CFU continued to accumulate huge debts in subsidising the beef industry, and the local consumer benefited from relatively cheap and good quality meat.

Post 1985

This scenario changed significantly following 1985 when the ACP preferential trade agreement came into force. From 1985 Zimbabwe had access to the lucrative EU market with a quota agreement of 9,200 tonnes per year, if certain conditions were met. Donor efforts, including substantial investments by the EU, focused on upgrading abattoirs to EU export standards (with significant funds invested in the main CSC abattoir in Bulawayo), zonation of the country, demarcating a fenced area of disease freedom for compliance with importing country SPS requirements (see section 4, below), and improvements in the veterinary services to ensure effective surveillance, movement control and disease management.

This switch in both the organisation and location of commercial production was influenced by the emergence of export opportunities to the European Union under a quota arrangement. In 1985, Zimbabwe, alongside Botswana, Namibia, and Swaziland (all members of the Africa, Caribbean and Pacific group (ACP)), negotiated a deal with the European Union for export of boneless beef under a generous reduced tariff, preferential access arrangement.⁵ Zimbabwe’s annual quota generated around US\$50 million of much-need foreign exchange each year. During the 1980s and through the 1990s beef exports grew, with 4,397 tonnes exported to the EU in 1986 and 9,184 tonnes in 2000, peaking at 14,503 tonnes in 1993, up from a minimum level of 715 following the FMD outbreak of 1989 and the resulting 18 month ban.

Figure 2: Beef exports to EU 1982-2000 (Source: FAOSTAT)



⁵ The ACP-EU Partnership is also known as the Cotonou Agreement and succeeded the Lome Convention.

Offtake from the commercial herd averaged around 25% through this period. With support from the European Commission the country was zoned into FMD-free beef export catchment, buffer/vaccinated, surveillance and infected zones, with the export areas firmly concentrated in the highveld. While the CFU's Cattle Producer's Association agreed a policy of export price parity for beef across the zones so as not to undermine the traditional beef production areas in the lowveld, many commercial cattle producers in this period diversified into wildlife production.

With the zonation of the country, there was a shift of beef production to the highveld (Natural regions I and II), with increasing numbers of animals being pen fattened and finished with grain-derived feed. By contrast to the pre-Independence situation, when in 1977 the large scale commercial herd numbered 2.8 million head, of which 63% were found in the southern portion of the country – Midlands, Matebeleland and Masvingo - by the mid-1990s there had been a reduction in the total size of the commercial herd to 1.4 million and an inversion of its spatial pattern, with 65% of the commercial herd now located in the Mashonaland provinces.⁶ The south of the country had experienced consecutive years of drought, it had been zoned in the FMD vaccination zone (outside the EU export catchment area – see below) and there had been a shift by many commercial ranchers into game; no longer was the south and lowveld the 'cattle country' of the past.

In this period, the feedlot system was used in a different fashion, with movements between areas more constrained due to SPS requirements. While top export grades were processed through the CSC, there was a growing number of private abattoirs who entered the market, and supplied higher grade cuts (Super and Choice) to urban consumers via supermarkets and other retailers. While demand continued to be largely for low grade meat, the supply was more than ever geared towards higher value grades due to the high incentives for export quality meat. The CSC pricing structure reinforced this, encouraging producers and processors to invest in a high value commodity production, processing and marketing system. In the decade from 1985 many new private abattoirs opened up and the share of throughput that went via the CSC declined from c. 90% at Independence to c. 80% by 1990 and c. 40% 1995. At the same time the commercial herd contracted, down from a pre-Independence peak of around 3m to around 2m in the mid 1980s to about half that by the mid 1990s, following the devastating impact of the 1991-92 drought.

With the major focus on exports to the EU, CSC took on a key role as the sole route of export to this market. In the post-1985 period between 80 and 95% of CSC exports were to the EU (except following the 1989 FMD outbreak when other regional markets were sought) Exports to non-EU markets declined through the 1980s from a pre-Independence volume of 47279 tonnes (in 1979) to only 3060 tonnes in 1990⁷. CSC's financial viability, however, came increasingly into question, and it was privatised (now the Cold Storage Company, with a large retaining stake kept by government). With public support the company continued to invest in its processing and marketing capacity, despite long running commercial losses and large debts. Meanwhile the lower end of the market was largely ignored, with low prices being offered for low grade meat. Offtake remained low from communal and resettlement herds for reasons discussed above, but a greater array of private abattoirs and marketing outlets became available which helped in increasing price competition for the limited number of small-scale beef producers.

Major droughts in this period, notably that of 1991-92, however, depressed prices as slaughter stock flooded the market. Due to large-scale mortalities, supply from the small-

⁶ Interview, Cattle Producers Association, Commercial Farmers Union, Harare 15/11/2005.

⁷ Non-EU export figures in 1980 and 1985 were 12830 and 14247 tonnes respectively (see Perry et al, 2003: Appendix 5).

scale sector declined afterwards due to restocking efforts. However, from 1995 the commercial herd recovered, with numbers reaching around 1.7m by 1999.

For the privileged few in the commercial beef industry able to cash in on the lucrative export trade, this was a boom period: there was a guaranteed export market offering good prices, export facilities were of high quality and well regulated, and disease control was effective and consistent. The Cattle Producers Association of the CFU was in buoyant mood⁸. Indeed, it is this scenario which today is remembered by those in the industry as the 'norm', and indeed underpins many of the contemporary policy recommendations (see section 2) for rehabilitating the beef industry. But the underlying crisis of the beef industry was not being addressed. The CSC continued to lose money in vast amounts, with the government bailing them out on regular occasions.⁹ The structure of the overall red meat market had changed significantly, with the share of the total market controlled by the CSC reducing from 84% in 1980 to only 47% a decade later.

Beef, with its complex pricing/subsidy structure was increasingly losing out to wildlife enterprises, particularly in the lowveld, but also in the highveld (Janssen et al. 1992). The supply of high-grade beef for export continued, completely out of kilter with domestic demand. In years when exports were curtailed (for example in 1989 following a FMD outbreak), there was no domestic demand for the product and top quality beef was disposed of at rock-bottom prices. And, perhaps most significantly, there was growing demand for land which was agriculturally productive in Natural Regions I and II, and, although the formal resettlement programme was slow and ineffective, land hunger, as witnessed by sporadic land invasions from the mid 1990s, was clearly evident.

Post 2000

This all changed with the land invasions and subsequent land reform following 2000. This study has attempted to gain a picture of the commodity system in 2005 in Masvingo: a very different picture emerges. Figure 3 offers a schematic overview of the complex commodity value chain today. The contrasts with the previous situation could not be more stark. In 2005 the so-called commercial herd stood at under 350,000, and deliveries to the CSC had collapsed almost completely. However following land reform definitions of the 'commercial' sector have of course changed. Today, herds regularly delivering cattle to a range of markets cut across land use types. As later sections of this report show, marketed output derives from communal and resettlement areas, with the new A2 resettlements becoming a potential core for future marketing. In addition, herds moved off ranches following settlement have been dispersed to a variety of sites through lease grazing, notably in the Nuanetsi ranch, as well as having been bought or acquired by new settlers. Some former commercial ranchers remain on the land and have been encouraged to apply for A2 settlement status, although the situation on the ground remains complex and dynamic.

⁸ Interview, Cattle Producers Association, Commercial Farmers Union, Harare 15/11/2005.

⁹ The financial woes of the CSC are not just a post-independence phenomenon of course (see Cross, 1971). However the situation has certainly did not improve (see Cross again in 1990; also CSC (various dates: Annual reports and financial statements). Recent press reports offer a similarly sorry tale. See: 'Banks pounce on CSC, Financial Gazette 22 May 2003; 'Troubled CSC headed for collapse' Financial Gazette 5 February 2004; 'US 23.7 mln foreign debt weighs down CSC, Financial Gazette 15 July 2004.

Figure 3: Post 2000 beef commodity chain

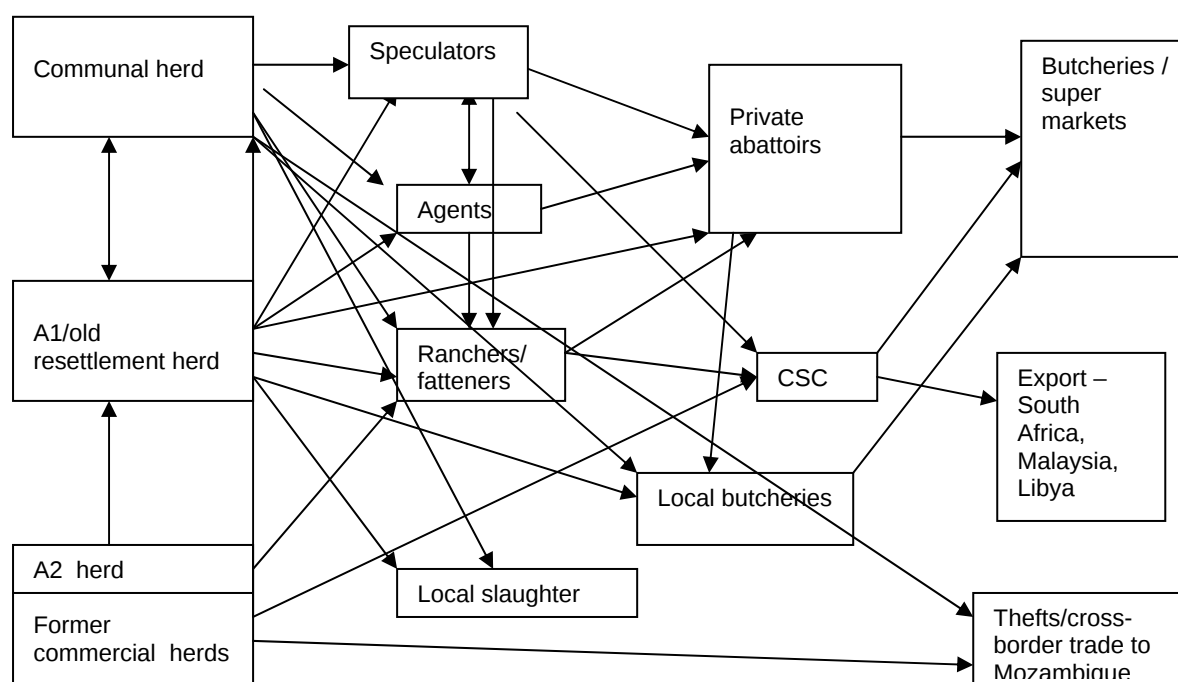
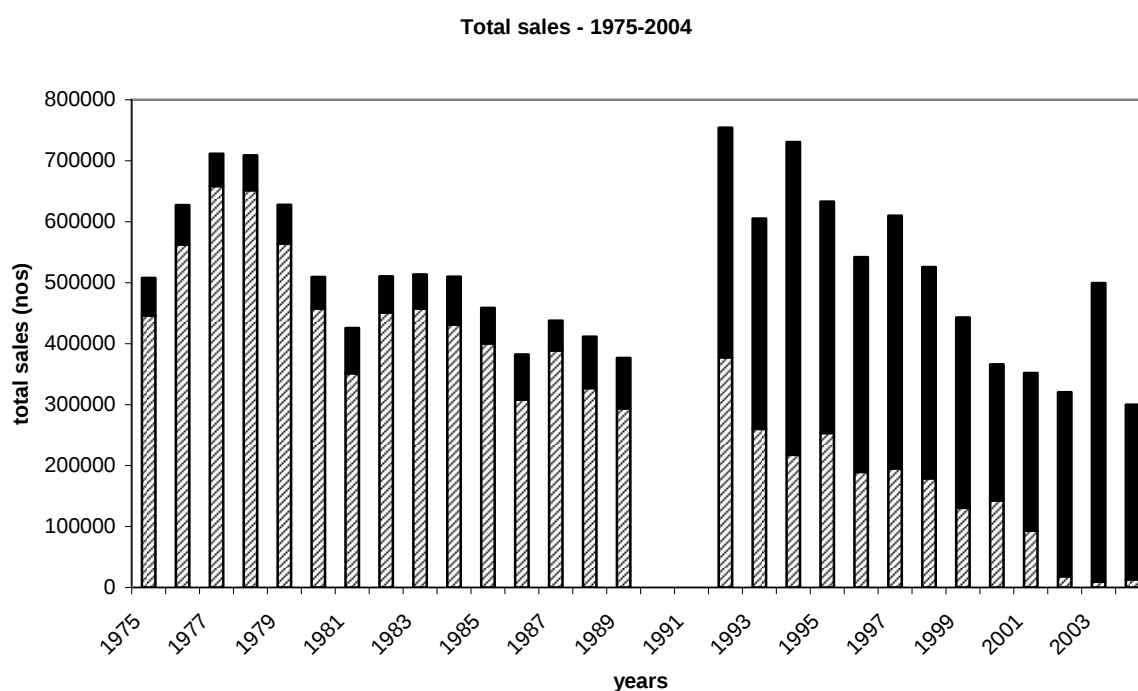


Figure 4 shows total formal cattle sales numbers between 1975 and 2004, mostly from the commercial sector, and the dramatic shift, especially since the 1990s, from marketing through the parastatal CSC (shown shaded) to private abattoirs (black). Total sales, especially since the peak period of the early/mid-1990s, have declined significantly in recent years returning to (approximately, especially considering the under-reporting of private sales levels) those seen in the 1980s.

Figure 4: Total sales 1975-2004 (Source: DVS) [Key: CSC sales, shaded; private, black]



Beyond beef

The focus on the beef commodity chain, of course, diverts attention from the diverse production activities of the smallholder sector. In the 1985-2000 period offtake as formal sale of cattle remained at between 1 and 3%, and virtually no communal or resettlement area cattle producers were able to take advantage of the growth in beef export opportunities. Indeed, with only around 60-75% of households owning any cattle at all, and the majority of these less than 5 animals (Jackson, 1989; Zhou, 1997), the opportunity for significant marketing of cattle was constrained to very few richer herd owners, often absentees with jobs in town. Simple ownership statistics of course hide the extensive sharing and loaning systems that occur within communal areas, allowing non-owners to make use of cattle especially for ploughing (Scoones and Wilson, 1988; Wolmer et al., 2002). Despite skewed ownership, cattle are nevertheless critical to the overall production system, and the productivity of arable agriculture (Barrett, 1992), and indeed the wider economy and social relations of the communal areas (Scoones, 1990).

Cattle in the communal areas have multiple uses – for draught power, transport, milk, manure, savings, bridewealth payments, and only for meat and hides as terminal products at the end of their productive life. Studies carried out in the 1980s demonstrated how valuable cattle were to communal area people, with the total economic value (estimated in replacement cost terms) far exceeding those derived from single-use beef animals (Barrett, 1992; Scoones, 1992a). Average maize yields per hectare, for example, correlate positively with size of livestock herd and consequent manure use (Rukuni, 1994). Comparing returns (by area and by individual animal) to communal area livestock production systems and commercial production (as beef, wildlife and combinations) at prevailing stocking rates showed how productive communal systems were, if the full range of economic value was accounted for. These studies demonstrated yet again that, given existing circumstances of limited land availability, low herd sizes and a multiple use system, where livestock production was intimately bound up with crop production, not gearing towards marketing (let alone export sales) was a perfectly rational position, despite all the policy and extension messages urging farmers to sell more.

These economic assessments of communal area systems largely focused on cattle. However, livestock production in communal areas has always been about much more than cattle alone. Goats, sheep, donkeys, poultry, rabbits and other 'micro' livestock are all an important complement to the production system, and need to be seen as integrated with overall production and livelihood strategies. Differences in ownership and use are also important, with poorer households and women making proportionately more use of such animals. However, small ruminants, equines, poultry and micro-stock have seen much less research and policy attention (although see Hayani-Mlambo, 2000; Wood and Mutepa, 2000; Scoones and Wolmer, 2001; 2002).

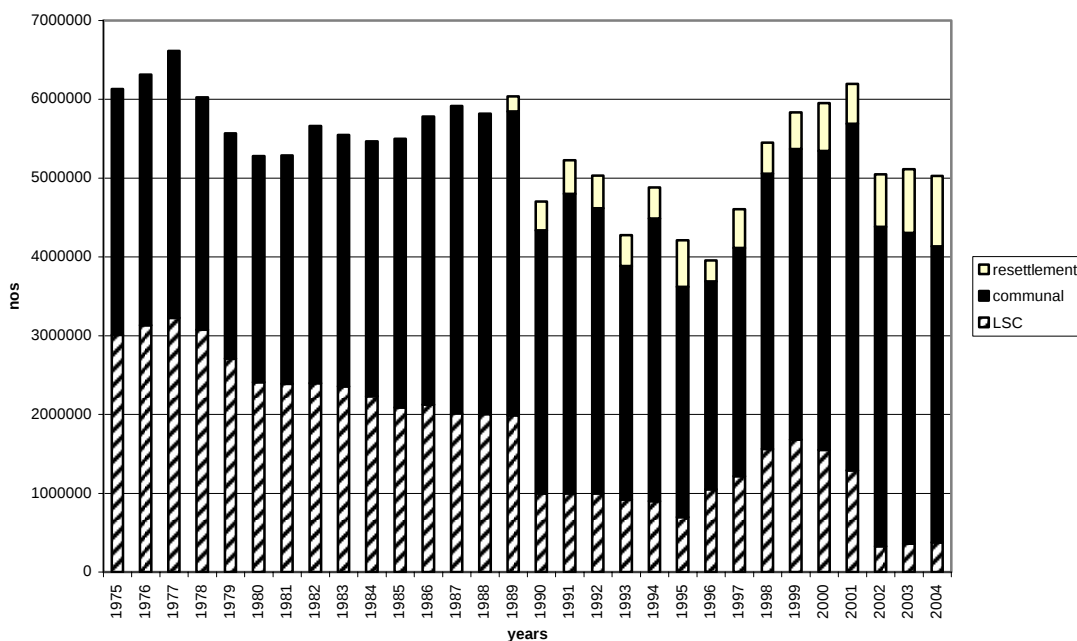
Trends in cattle ownership

Figure 5 highlights trends in cattle numbers over thirty years from 1975. The total national herd has remained between 5 and 6 million over this period, with peaks in 1977, 1989 and 2001. Dips occurred in overall numbers due to the liberation war the mid 1970s and droughts during 1982-84, 1991-92 and since 2001. The pattern is one of cyclical growth and decline as rainfall, resources and disease challenges have shifted over time. In the commercial sector stocking rates have generally followed the recommended norms for commercial beef production with approximately 0.1 Livestock Units per ha in drier areas and 0.14 Livestock Units per ha in wetter areas. Destocking has occurred during drought periods, as animals were sold or moved to new pastures. In the communal areas by contrast a different stocking

strategy is deployed, aiming at maximising numbers. With the grazing area being the limiting factor and the focus being on total numbers rather than beef grade quality, individuals always attempt to maximise herd numbers. This means that stocking rates are considerably higher in the communal areas (at 0.3 – 0.5 animals per ha or up to 0.8 animals per ha in stress years) and herd numbers at the more localised scale fluctuate more widely, hitting resource limits during droughts, with resulting density-dependent mortality, and subsequently recovering in the wetter periods between droughts (Scoones, 1993).

Since the mid-1970s a major change has occurred in the distribution of cattle between different land-use categories. The major trend, now over a long period, is the decline in the commercial herd – first as it retreated towards the export areas of the highveld and extensive ranchland was stocked with wildlife and more recently, following 2000, as land reform redistributed land and stock (see above). Cattle on resettlement areas were limited until 2000, in line with the insignificant progress of the post-Independence resettlement policy. After 2000, cattle numbers on the new resettlements have increased, but not dramatically in the official figures (Figure 6), as many have remained registered in the communal lands. Over the period since Independence cattle have become increasingly concentrated in the small-scale sector (communal and resettlement) and this is especially so today, with some 89% of the total herd located here.

Figure 5: Cattle populations, 1975-2004 (Source: DVS)



Livestock and wildlife

Pre- and post-land reform wildlife management has been held up by some as a panacea for livelihoods in Zimbabwe's arid regions in both the communal and commercial sectors. Legislative and economic changes and the rise of a safari hunting industry had encouraged the massive growth of game ranching on commercial ranches from the 1970s onwards (Child, 1988). This trend was particularly marked in the more arid south of the province outside the beef catchment zone (Wolmer et al., 2003). By 1994 wildlife ranching was one of the fastest growing new uses of commercial farming land in Zimbabwe generally with 20.7% of white commercial farms under some sort of wildlife utilisation (Hill, 1994). A further development since the late 1980s was the emergence of wildlife 'conservancies'. These are

amalgamations of privately owned ranches surrounded by veterinary fencing and with internal fencing removed. The largest and best-known conservancy is located in Masvingo Province and was initially established as part of a black rhino conservation scheme. This, the Save Valley Conservancy, is comprised of 24 properties and with a total area of 3387 km² it has become the largest private wildlife reserve in Africa (du Toit, 1998). Some limited infrastructural development in the form of lodges, some restocking of game, particularly larger trophy animals, and some effective marketing made a number of wildlife based enterprises take off during the 1990s,

The economic case for the shift to commercial wildlife utilisation on large properties – particularly in the context of diminishing revenues from beef - centred on the foreign exchange raising potential of charismatic fauna through hunting and ecotourism opportunities.¹⁰ The growing hunting and tourism markets made such enterprises potentially highly lucrative on the extensive land holdings. The ecological arguments put forward have included: the fact that the niche separation of browser and grazer wildlife enabled a higher carrying capacity and was hence more productive, and that wildlife species were evolutionarily adapted to dryland environments and thus more resilient in times of drought.¹¹ However, beyond some much vaunted, but nevertheless isolated and limited, projects, those in the poor and marginal communal areas of the country did not benefit from the growth of the wildlife industry and they remained politically controversial. CAMPFIRE (Communal Areas Management Programme for Indigenous Resource Exploitation) has been the best known attempt to disburse wildlife revenue and devolve authority to local communities in the communal areas yet the number of communities who have benefited, and the actual amounts they have received, have been very limited (Bond, 2001; Wolmer et al., 2003; Wolmer, 2006).

In 2002 a potentially significant step for the future of wildlife/tourism projects in the lowveld of Masvingo Province was taken with the signing into existence of the Great Limpopo Transfrontier Park – spanning Kruger National Park in South Africa, the newly designated Limpopo National Park in Mozambique and Gonarezhou National Park in Zimbabwe. The transfrontier parks goals include: biodiversity conservation, the growth of the tourism sector, regional cooperation and socio-economic development. This is set within an even broader 'Transfrontier Conservation Area' – the extent of which remains undefined but which potentially encompasses large portions of Chiredzi and Mwenezi Districts of Masvingo Province – in a 'biosphere reserve'. Proponents of this vision talk of need to rehabilitate landscapes 'damaged' by people and livestock, and to rehabilitate a 'natural' wilderness, justified in terms of ecological connectivity and holism.¹²

¹⁰ According to Bond (2001) the value of sport-hunting in Zimbabwe increased from US\$2 million to US\$12 million per annum between 1984 and 1993, and the gross number of visitors to Zimbabwe – largely attracted to 'nature based' activities – increased by 325 per cent from 1980 to 1990 (although real visitor expenditure per capita declined over the same period).

¹¹ It is important to note that studies of wildlife management in Zimbabwe have explicitly or implicitly posited commercial beef production as the alternative to game and tended to discount dryland agriculture and agro-pastoralism as viable land use options (Wolmer et al., 2003).

¹² This is the latest in a long history of ambitious wildlife/tourism projects for Masvingo Province. Booth (2005) lists 71 reports/planning documents pertaining to tourism and regional development in the 'Great Limpopo TFCA' region (see also Wolmer, 2006).

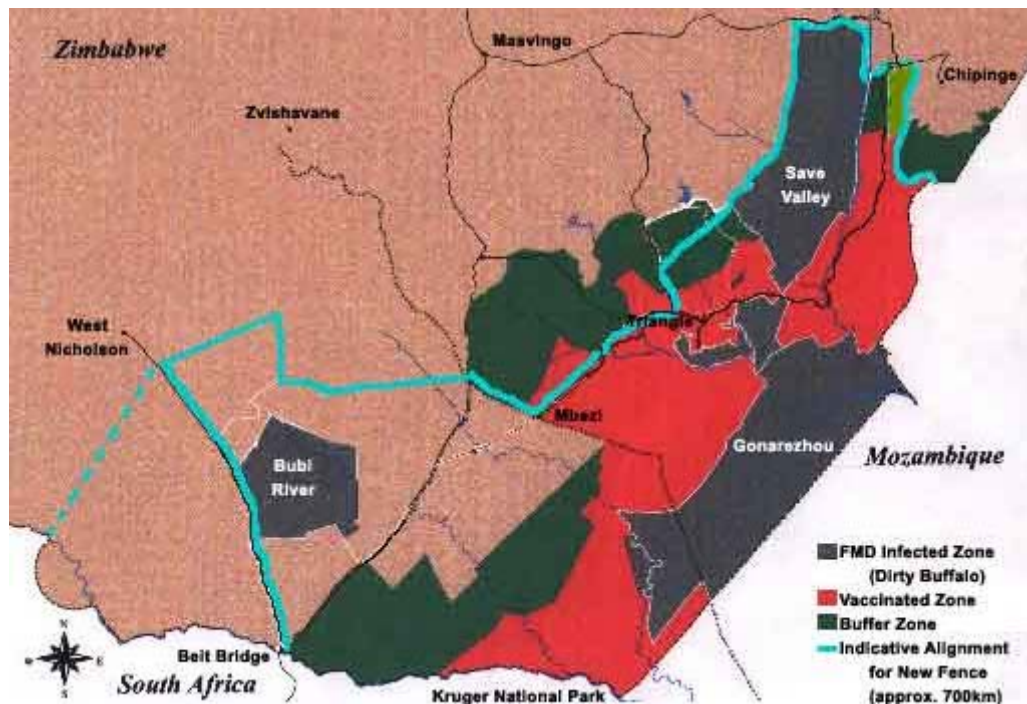
Map 1: Great Limpopo Transfrontier Conservation Area



Essential to this initiative is the establishment of corridors linking up wildlife management areas. The Sengwe-Tchিপise Wilderness Corridor linking Kruger and Gonarezhou is now going through formal planning process (Booth, 2005) and a number of other corridors have been proposed. Mwenezi RDC have suggested a corridor along the Mwenezi River; a corridor is proposed linking the Gulugi section of Gonarezhou National Park with Malilangwe Conservancy; and further corridors linking Malilangwe with Save Valley and Chiredzi conservancies.

Ostensibly the vision of a lowveld biosphere reserve – acting as a biological bridge for infectious diseases with its attendant free movement of wildlife across borders – is another nail in the coffin of veterinary hopes to combat FMD and re-establish beef export zones (see below) and prevent the spread of bovine tuberculosis from Kruger National Park in South Africa into Zimbabwe. Advocates for a lowveld biosphere reserve have, however, argue for a win-win scenario where bigger and better enforced fencing and veterinary regimes, with international funding and support, allow for both wildlife and export beef zones (du Toit, 2005). A more sophisticated win-win vision envisages the transfrontier conservation area as akin to a ‘spatial development initiative’ integrating an expanded and more equitable wildlife/tourism sector with agro-pastoral activities and irrigation schemes (Cumming, 2004).

Map 2: Lowveld biosphere reserve and veterinary fences (Source: du Toit, 2003)



However, the dreams of a tourism-driven economic hub have been thrown into disarray by the land reform programme and Zimbabwe's economic difficulties. Many of the game ranches and conservancies integral to this wildlife landscape have been settled by smallholders managing crops and livestock and not interested in game; the CAMPFIRE scheme has dwindled in the absence of donor support; and tourism has markedly declined. Various initiatives to bring scheduled air services to the region – essential for a viable tourism sector – have been put on hold.

On the other hand safari hunting has persisted at relatively undiminished levels¹³ and since 2001 the government has been developing an as yet unimplemented policy for wildlife based land reform which aims to maintain the business viability of wildlife operations while spreading the benefits to a wider segment of the population (see Wolmer et al., 2003).¹⁴

Livestock disease

Veterinary services were first established in Southern Rhodesia early in the twentieth century and were geared primarily to the commercial beef sector. Prior to independence the visibility of veterinary staff in the communal agricultural sector was close to zero. The veterinary department left that task to the then Ministry of Internal Affairs. Veterinary experts would only surface to issue quarantine orders when outbreaks of specified diseases

¹³ The persistence of hunting on resettled land has been controversial internationally. See, for example 'The hidden links between American hunters and Zimbabwe's dictatorship' *Newsweek (US)* 13 January 2006.

¹⁴ As the Ministry of Environment and Tourism put it in 2001 (p 4-5). 'The on-going land reform programme ought to take advantage of the economic and ecological attributes of wildlife production in parts of the country that are prone to drought and have fragile soils which cannot sustain crop production without massive investment in irrigation. Of the country's natural regions, wildlife based land reforms can be successfully implemented in Natural Region V whose crop production potential is generally poor'

occurred in communal areas (see Aspinall, 1993; Milton, 1998), although major investments in dip tanks were made.

Historically – and to the present day – the Department of Veterinary Services has devoted much attention to combating Foot and Mouth Disease (FMD), as discussed above¹⁵. The first recorded outbreak of FMD was in the southeast of the country in 1931. Between 1931 and 2002 there were a further 85 outbreaks (averaging 1.2 per year) (Thomson, 1995; Forman et al., 2001; Vosloo et al., 2002). Of the outbreaks from 1931-2000, 59 were in commercial beef herds, 3 in feedlots and the rest were in communal herds. 52 were in Masvingo province and 27 in Matabeleland North and South.

FMD control measures were rigorously enforced until the 1970s when the liberation war led to a breakdown in disease control. With the spread of the war, movement controls were no longer enforced and stock thefts from commercial properties increased. These unpopular veterinary measures were used as a focus for mobilising rural populations to the liberation cause (Ranger 1985). Thus between 1972 and 1976 there were 16 FMD outbreaks on commercial properties (Forman et al, 2001; Lawrence et al, 1980).

With the 1985 ACP agreement (see above) the pre-condition for access to the high value EU market was compliance with stringent Sanitary and Phytosanitary (SPS) regulations. Given the extreme sensitivities about FMD in Europe, this necessitated the importation of a whole raft of EU regulatory paraphernalia, and a range of requirements for disease control and veterinary systems¹⁶. Specifically, these revolve around the need to construct and maintain adequate barriers between cattle and FMD carrying buffalo (Perry et al., 2003). To this end FMD control measures were implemented in Zimbabwe, with EU support. Significant aid funds, in addition to on-going government expenditures, were thus invested in keeping a commercial beef industry going.

Measures included fenced zonation (establishing FMD-free beef export catchment, buffer/vaccinated, surveillance and infected zones); surveillance and monitoring systems (including inspections at dip tanks, auction sales and prior to issuing movement permits and during disease investigations); strict movement control (involving policed roadblocks between zones and on roads to conservancies and wildlife areas, as well as enforcement of movement permits); isolation and quarantining (of infected stock and those being moved to slaughter); and vaccination (twice yearly in designated vaccination buffer zones)¹⁷.

Following the establishment of the WTO SPS Agreement, which incorporated the OIE Animal Health Code and the designation of FMD as a List A notifiable disease, the export

¹⁵ Understandings of the epidemiology of FMD in southern Africa grew significantly in the 1950s following research largely in South Africa (see for example Thomson, 1994; Bastos, 1998; Bastos et al., 2000; Bruckner et al., 2002). The role of wildlife and particularly buffalo as carriers and reservoirs was also elaborated (e.g. Thomson, 1996; 1999; Thomson et al., 1984, 1992, 2003). More recent work has focused on more detailed molecular characterisation of SAT type FMD viruses, highlighting the heterogeneity and complexity of what is termed simply FMD (e.g. Bastos et al., 2001; Knowles and Samuels, 2003)

¹⁶ Since the 2001 outbreak of FMD in the UK, these sensitivities have of course escalated. However, EU policy has for a long time seen 'Transboundary Animal Diseases' as major threat, with imports potentially quickly undermining European efforts over much of a century to eliminate major livestock diseases. The policy objective of TBD disease elimination is reflected in the approach of the international standard-setting body, the OIE (Office International des Epizooties) which classifies FMD as a 'Class A' and so notifiable disease. To meet OIE standards FMD must be completely under control, with a range of mitigation and early warning measures applied (see www.oie.org).

¹⁷ The Department of Veterinary Services is in charge of some 3000km of cattle fences and 1500km of game fences across the country (www.africaonline.co.zw/vet/field.html).

requirements were made stricter still¹⁸. Today the EU is in addition requesting full individual livestock identification and traceability schemes, so that all exported animals can be linked to origins¹⁹.

Following zonation in 1985 there were 13 primary and 92 secondary outbreaks recorded up to 2000. Of the primary outbreaks 5 were in the vaccinated buffer zone, 2 in the surveillance area, 1 in the free non-export zone and 5 in the export zone. Over the last forty years, on average 28,000 animals were deemed at risk as a result of outbreaks up to 2000, but numbers at risk were as little as 4 in 1966 and up to 120,000 in 1972. In the period from 1987 to 2001 the average at risk was 2,256 with average morbidity of 8% and mortality zero (due to both low susceptibility and high vaccination rates). Patterns of secondary spread have been variable, with a range between zero and 68 foci in outbreaks up to 2001. This pattern changed dramatically from 2001-04 (see Perry et al., 2003, Appendix 2: pp. 10-11).

Since 2000 there has been a massive escalation in FMD outbreaks in Zimbabwe in part triggered by the breakdown in movement control accompanying the farm occupations and following fast track land reform programme. Cattle moved uncontrolled from 'communal' to 'commercial' areas and from red into green zones, and even into the buffalo-inhabited conservancies; and miles of veterinary fencing disappeared to be recycled as snare wire and garden fencing. The breakdown in enforcement of cattle movement control occurred at a time when, due to the wider collapse of the economy and ongoing restructuring, the DVS was experiencing severe budgetary constraints. This was compounded by staff shortages (due to economic migration and HIV/AIDS); shortages of fuel and vehicles and off foreign exchange with which to buy vaccines. All of which massively impaired the capacity of DVS²⁰.

In July 2003, FMD was recorded near Harare, and it quickly spread through Mashonaland and so to the whole beef export zone, the first since 1989²¹. As a result all exports were suspended and only movements out for direct slaughter were permitted. A huge list of measures was advertised by the DVS, although the limited capacity on the ground made implementing them problematic. All three Mashonaland provinces were put under quarantine and all private auction sales were banned. As the CVO noted: "The spread of the disease was exacerbated by illegal livestock movements associated with land reforms and drought" (OIE, 2003). But also there were other factors at play. The massive growth of private abattoirs and local butchery slaughter following the liberalisation of meat markets after structural adjustment had encouraged a country-wide trade in meat, often contravening veterinary regulations. High premiums were paid within the export zone on local markets, creating a demand pull and a big incentive to break the rules. With government capacity to enforce such regulations severely hampered by reductions in budgets due to the general ESAP-imposed fiscal squeeze, a FMD outbreak in the export zone was waiting to happen (see DVS website update, 3 September 2003).

¹⁸ http://www.oie.int/eng/normes/en_mcode.htm

¹⁹ *Regulation (EC) No 178/2002* (OJ L31, p1, 1/02/2002) of the European Parliament and of the Council of 28 January 2002, available on <http://europa.eu.int/eur-lex/>

²⁰ As at July 2002 the Field Branch of Vet Services had an establishment of 53 veterinary officers, 97 animal health inspectors; 261 veterinary livestock technicians; 568 dip attendants; 27 veterinary guards; 10 hunters and 2500 casual labourers (www.africaonline.zw/vet/field.html). These were across 8 Provincial Veterinary Offices, 3 Provincial Diagnostic Labs; 53 District Offices; 6 sub-district offices in commercial farming areas; 308 Animal Health and Management Centres in communal areas; and 2628 dip tanks. However many of these posts were not filled. In 2003 a total of 76 civil servants were reported to be on the books, together with 836 animal health assistants and auxiliaries (www.oie.int/hs2/qi_veto_pas?c_pays=220).

²¹ See 'Foot and mouth disease in Zimbabwe', New Agriculturalist, May 2003; www.new-agri.co.uk/03-5/develop/dev02.html

Across the country in 2003, there were 354 (SAT 1, 2) outbreaks reported, involving 20,295 cases and 97 deaths. A major ring vaccination campaign was launched, with 4,144,070 (www.oie.int/hs2) vaccinations during the year. There was no slaughter-out policy implemented, but all animals on infected properties and communal areas were vaccinated and branded, with a four year quarantine imposed, with only direct sales allowed. Areas in concentric circles around the affected site were in turn vaccinated prophylactically and quarantined with different levels of restriction. The whole strategy, as noted by the CVO was “adversely affected by a critical shortage of vaccine, vehicles and fuel” (OIE, 2003).

Map 3: FMD outbreaks 2001-2003 (Source: DVS)

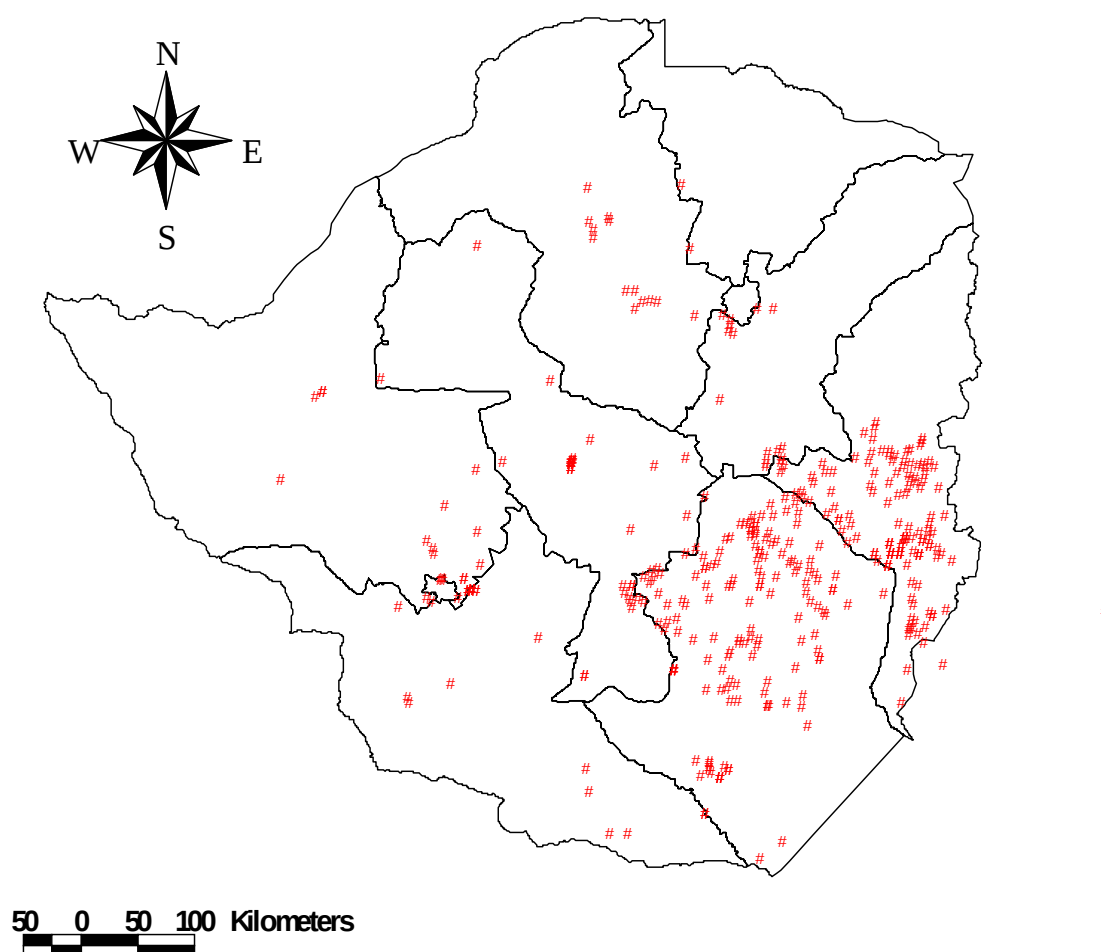
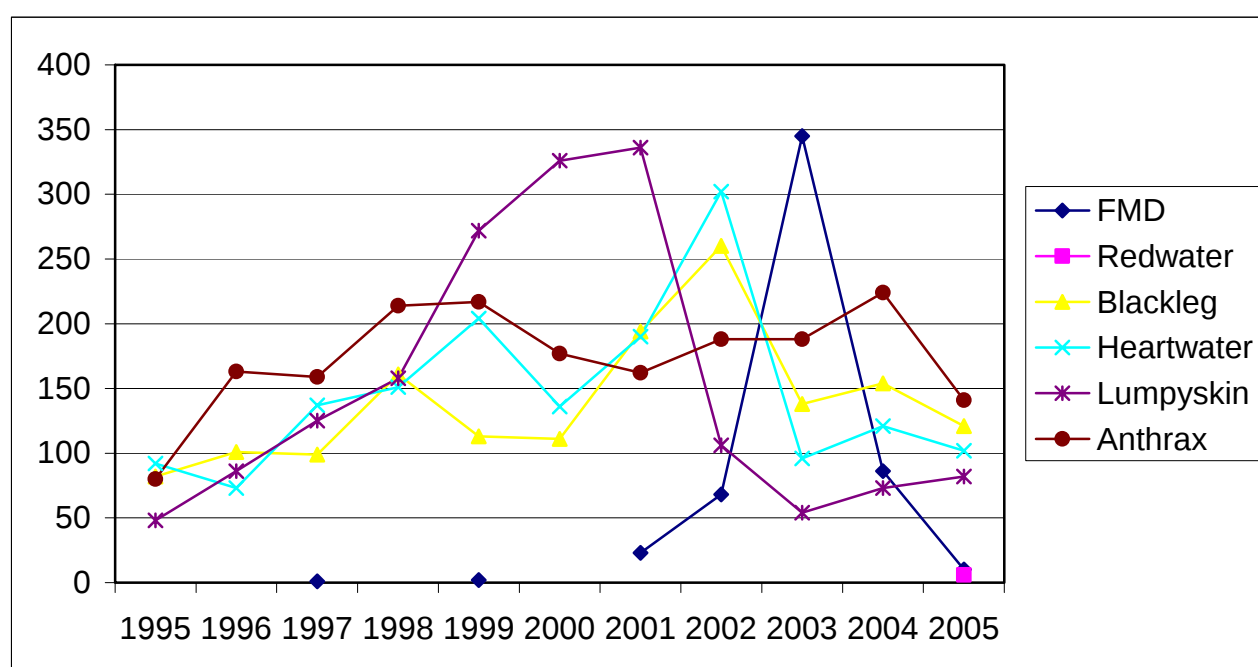


Figure 6 shows the incidence of FMD and five other significant diseases since 1995. During this period the funds to support basic disease control strategies (intensive or strategic dipping and vaccination) have gradually declined as vaccines and drugs have become more expensive and less readily available and support for communal/resettlement area dipping has become more erratic with declines in dipping frequency. Heartwater and blackleg incidence peaked sharply in 2002.

Figure 6: National incidence of selected diseases 1995-2005 (Source: DVS)



Land reform and livestock

This historical data on contexts allows us to put into perspective the changes that have occurred since 2000 as a result of the major land reform initiative. A lot of claims have been bandied around in recent years which add to a narrative of disaster and collapse. This is heard of course most vociferously from the former commercial sector, as well as the linked marketing enterprises who had geared themselves to the export-oriented focus of the mid-1990s. With considerable (historical) subsidy from government, substantial support in the form of donor aid (especially from the EU) and continued export preference through the ACP agreement, the largely white-owned commercial beef sector, at least in the highveld, had indeed been doing relatively well in this period, contributing significant amounts of foreign exchange to the national exchequer, as well as keeping farm enterprises going and providing (admittedly limited given the nature of the production system) employment for farm workers. When the land invasions started and when these became formalised in the Accelerated Land Reform and Resettlement ('Fast Track') programme²², this not surprisingly was seen as a major threat to these businesses and the viability of the livestock industry as a whole.

In the first instance the occupations of commercial ranches (alongside other properties) that gained momentum in 2000 led to the physical disruption of ranching activities as people physically settled in, and ploughed up, paddocks and fence-cutting, fire-setting, 'poach-grazing', snaring and stock theft took place. In much the same way these activities had been

²². <http://www.gta.gov.zw/Land%20Issues/LAND.htm>

a feature of the liberation war 25 years earlier²³. Continued disruption in the early 1980s, as now, led ranchers to claim that 'the whole viability of the ranching area was threatened'.²⁴

With the roll out of the formal fast track resettlement programme the majority of white-owned commercial ranches were settled under the smallholder 'A1' and small commercial farm 'A2' schemes, commercial ranchers sold large numbers of stock for slaughter. Press reports, both in local and international sources, local commentators and anecdotal accounts often highlighted the collapse in commercial herd numbers, with the looming disappearance of the exotic gene pool or the slaughter of pregnant cows presented as emblematic of Zimbabwe's problems. For example:

Zimbabwe's commercial beef cattle herd, which until three and a half years ago produced exports worth more than £1.3 billion annually, is on the verge of extinction because of political upheaval. The national herd, bred over 110 years to survive in Zimbabwe's harsh environment, stood at 1.4 million animals in 2000, when President Robert Mugabe launched his farm occupation strategy. Today, fewer than 125,000 animals survive.²⁵

The national herd has plummeted from about 10 million in 1990 to fewer than 5 million by 2003²⁶

The commercial herd was officially 1.25 million in 1999. This was probably an underestimate – with 1.5 million a more realistic figure. Now there is no more than 10% of that herd remaining. In Gutu/Chatsworth for example, prior to land reform there were 55,000 commercial cattle in the district. In 2003 there were 5000. Now there is virtually nothing.²⁷

However, the figures quoted are often open to question. As the figures above show (Figure 6), the 'commercial' herd undoubtedly has declined (estimates of course vary) to around 350,000. This was as a result of significant disposals during 2001-02 (although not as much as some suggest (given the lack of a recorded increase in hide/skin figures [FAOSTAT]), illegal movement of commercial herds out of the country (largely to Mozambique) through theft/rustling or through deals brokered by commercial farmers with Mozambicans; and through redistribution of cattle to new resettlement areas (through 'confiscation'/theft or through purchase at knock-down prices). Land reform also disrupted a breeding season and calving percentages went below 25-30% contributing to the decline²⁸. However, despite broad patterns being evident from the statistics, details remain unclear. As a CFU informant admitted: 'there is no accurate statistical database – this is just extrapolation from talking to guys on the ground'. A perhaps significant number of the commercial herd is still being run in the new resettlement areas with often fragile and informal agreements with local authorities, and much continued lack of clarity exactly who these are (see below, part IV, section 11).

²³ The monthly meetings of the Victoria Stockholders Association of the period report 'alarmingly high' levels of stock theft, poaching, snaring, fence cutting and 'illegal grazing'. Between April 1979 and January 1980, for example, 3000-4000 head of cattle were abducted from two properties south of Bubi River and Mateke Hills. Devuli Ranch (now in the Save Valley Conservancy) had 28,000 head of cattle at the start of the war and only 6000 left in 1980. Some had been sold but the majority had been stolen. The ranch went as far as to hire mercenaries to protect its cattle (Wels 2000).

²⁴ Masvingo Records Centre (MRC) SBV/13/1: Hunting, poaching and snaring: Summary of proceedings of a seminar in Masvingo, organised by the Cattle Producers Association, 23 February 1984.

²⁵ 'Farm occupations put Zimbabwe's cattle herd on verge of extinction' *The Scotsman* 20 Dec 2003

²⁶ *The Chronicle* 9 December 2004

²⁷ Interview, CFU representative, Harare 15/11/2005.

²⁸ Interview, Livestock Department, Harare 15/11/2005.

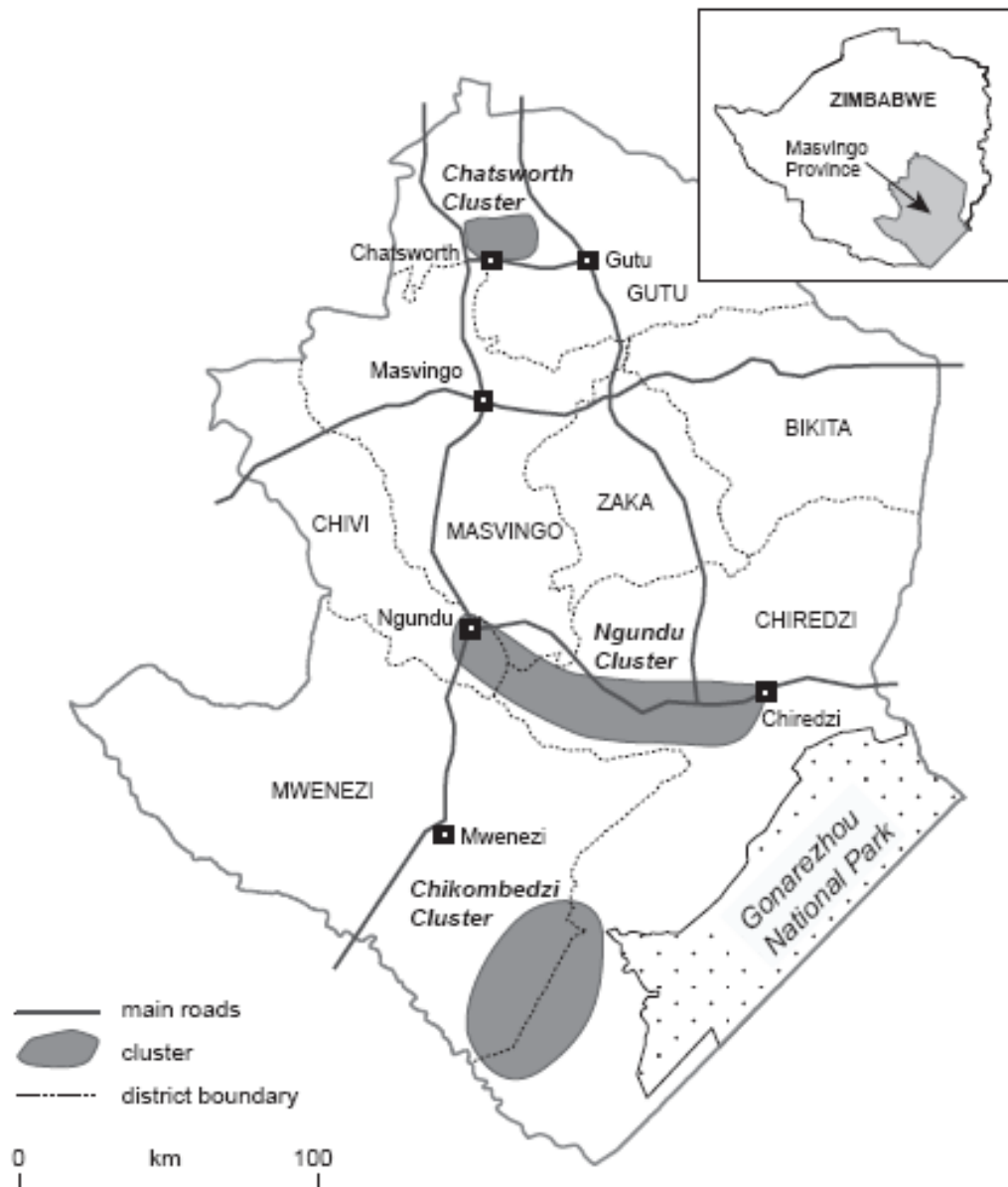
Today the situation is unclear. What is known for sure is that things have changed dramatically. But in what ways, how much, and with what implications? Now is the time to look towards the future, yet this must be done on the basis of a solid understanding of challenges and potentials. The themes discussed in the previous sections have major implications for the way future policies are thought about – whether in terms of breeding, production, marketing or disease control. To think about these issues more concretely though requires a more disaggregated local level look at unfolding patterns, going beyond the generalised national picture presented above to locally-specific dynamics. This is the subject of the remainder of the report, with Part II introducing the Masvingo study before Part III goes on to explore the empirical findings.

Part II: the provincial study

1. Masvingo Province Case Study

This study has focused on a single province, Masvingo. Masvingo Province is situated in the south-eastern corner of Zimbabwe and extends over 56,566 square kilometres or 14.5% of Zimbabwe (see Map 4). It is made up of seven districts, has a human population of 1,318,705 recorded in the 2002 census and significant livestock populations (953,666 cattle, 639,041 goats and 59,945 donkeys recorded by the provincial veterinary department in 2004). The provincial capital is Masvingo. Other towns and market centres include Chiredzi, Mwenezi, Chivi and Gutu/Mpandawanda.

Map 4: Masvingo province: districts and main urban/service centres, and case study clusters



The province encompasses three 'natural regions'²⁹, with the wetter northern districts (Gutu, Masvingo) including areas of Natural Region III and accounting for 7% of the land area, and the drier southern districts (Chivi, Mwenezi, Chiredzi) being Natural Region IV and V which account for 82% and 11% of the provincial land area respectively. The largest land area is thus made up of drier 'lowveld' areas with altitudes below 600m and rainfall ranging of less than 400mm (c.v. 35%). In terms of land suitability classifications therefore much of the province has long been deemed to be only suitable for extensive ranching.

A newspaper article in the 1950s, for example, asserted that 'it is widely recognised that the lowveld is *the* cattle country of Africa'.³⁰ Indeed, for many decades, cattle production was the main form of land use in the commercial farming sector in the lowveld. Soon after its arrival in Rhodesia, the British South Africa Company was providing considerable assistance to aspiring cattle ranchers, primarily by making cheap and abundant land available, as well as encouraging a plentiful supply of cattle from the smallholder sector by the imposition of taxes (Cunliffe 1993). In the first decade of the twentieth century, prior to establishment of any ranches, the BSAC was already grazing cattle in the lowveld between the Mtirikwe and Tokwe Rivers (Bannerman, 1980). In 1914 the BSAC alienated a massive piece of land as Nuanetsi Ranch. This was over 3,250,000 acres, taking up a vast amount of the lowveld

By 1951, after much lobbying by the commercial ranchers' cattle committee, an abattoir was opened in Fort Victoria (Masvingo town) and fortunes picked up for commercial ranchers in the lowveld throughout the 1950s. This was described as a 'decade of progress and optimism, between the grey years of depression and war, and the political storms of the sixties' (Somerville, 1976: 170). As with the cattle industry nationally, however, the sector was heavily subsidised and supported by government.

Notwithstanding this 'cattle country' image of Masvingo, irrigated sugar has long been an important part of the commercial sector (at Triangle, Hippo Valley and Mkwazine); the game ranching sector had been gaining ground at the expense of beef ranching; and the communal areas have always had mixed crop-livestock systems.

Up to 2000 resettlement areas were limited to 8.4% of Zimbabwe's total land area. Since then resettlement areas have increased dramatically with 829,643 ha of A1 and 326,851 ha of A2 new resettlement plots in Masvingo Province. By 2003 the total area of smallholder farming area had increased by 27.7% (PLRC, 2003). Before the fast track land reform programme, large-scale commercial farms abounded in Gutu, Masvingo, Chiredzi and Mwenezi districts of Masvingo Province. As of mid-2005 only 76 white-owned farms measuring a total 399,443 ha remain in the province out of a previous official total of 459. Prior to the recent land reform Mwenezi was essentially a large-scale ranching 'enclave', except for the relatively minor Maranda and Matibi 1 communal lands within its perimeter, while Chivi district was exclusively a communal area. Other districts had more mixed land uses by contrast. Today this pattern has changed. Map 5 shows the current land use in the province (according to best estimates as of November 2005).

This new land use map obscures a notable pattern in Masvingo Province (particularly true of Mwenezi and Chiredzi Districts). Many of the white former commercial farmers are still resident in the homestead on their former properties and, in some cases, have retained paddocks and have A2 plots designated in their names, some with formal 'offer letters'.

²⁹ The 'Natural Region' classification (Vincent and Thomas, 1960) is based on rainfall amount and variability, with NR I having the highest, most regular, rainfall (over 1000mm a year) and NR V the lowest, most erratic rainfall. This classification has led to recommendations on the most productive and suitable land uses for the different regions. For example, areas designated as Natural Region V have been characterised as only useful for extensive ranching.

³⁰ *Fort Victoria News* 6 January 1950.

In addition to urban and farming areas, the province contains significant areas of Zimbabwe's wildlife estate, including Gonarezhou National Park in the far south east. Pre-2000 many commercial farms in Chiredzi and Mwenezi districts in particular had extensive wildlife operations on large scale ranches. These included the very large Save Valley Conservancy³¹. Many of these game ranches have now been resettled through land reform, and some areas of the parks estate (e.g. the Chitsa area of Gonarezou) remain disputed following land invasions (Wolmer et al., 2003).

2. Land reform and resettlement

The post-2000 land reform has therefore had a major impact on the distribution of land resources in the province. Table 1 provides details of the official provincial statistics of fast track resettlement, showing a total of 1,156,495 ha having been redistributed, with 26,727 beneficiaries as of March 2005.

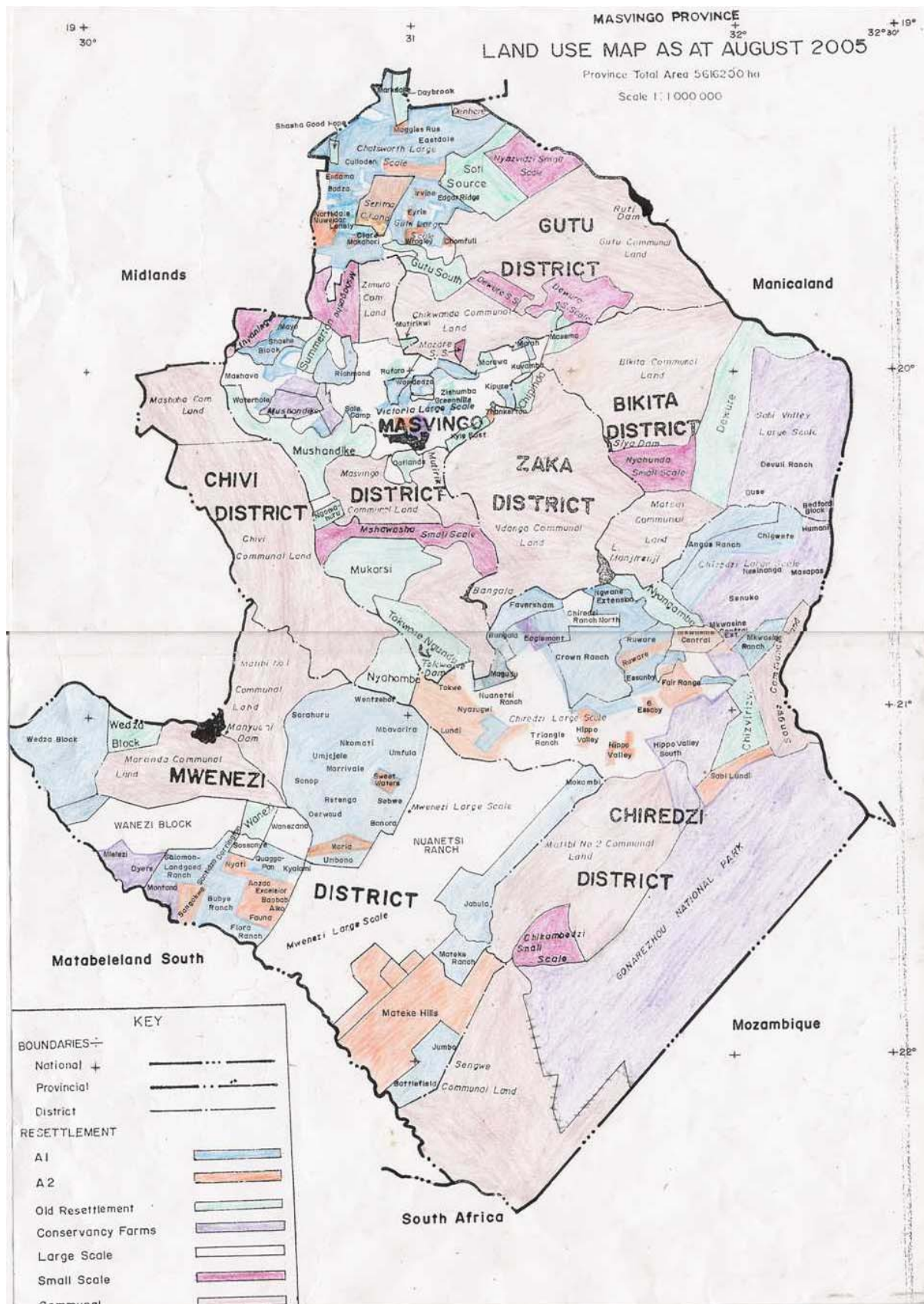
Table 1: Masvingo Province resettlement status March 2005

	Gutu	Masvingo	Chiredzi	Mwenezi	Province
A1 Model					
Total farms settled	86	44	28	58	216
Total Area (ha)	158280.9	49108.2	177991.4	444262.8	829643.4
Total settlers	5529	2295	8644	9117	25585
Average area / settler (ha)	28.6	21.4	20.6	48.7	32.4
A2 Model					
Total farms settled	15	12	70	70	167
Total area (ha)	20105.3	7754.7	73927.5	225063.6	326851.2
Total settlers	142	17	630	353	1142
Average area/settler (ha)	141.6	456.2	117.3	637.6	286.2

Source: Land Department Masvingo 2005

³¹ Comprised of 24 properties and with a total area of 3387 km² this became the largest private wildlife reserve in Africa (du Toit 1998).

Map 5: Land uses in Masvingo Province, 2005



The majority of new farmers in Gutu, Masvingo, Chiredzi and Mwenezi were settled according to the 'decongestion' A1 model of generally small arable allocations and shared grazing land. Another model was the self-contained A2 type designed to perpetuate commercial farming in the country post- land reform, but on comparatively smaller areas in order to address the problem of under-utilization associated with huge former commercial holdings and to also address equity, by widening the stakeholder base of commercial agricultural producers.

3. Livestock populations

Total cattle populations in the province were severely affected by the 1991-92 drought, with major mortalities and sales occurring across all sectors. Through the rest of the 1990s, populations gradually recovered through restocking and natural births, reaching a 754,500 by 2000, 76% of the pre-drought numbers. In 2001 there was an 18% reduction in the provincial herd. The Masvingo Province Veterinary Department figures show a rise in cattle numbers from 2001-2004 but this is controversial and should be treated with caution. Disaggregated by district these figures show a steady or declining cattle population in all districts except Gutu which records a somewhat suspect rise in cattle numbers of over 100,000 between 2003 and 2004. Unsurprisingly it is the large scale sector which has the largest recorded decline in livestock numbers from 28.1% of the provincial herd in 1997 to 7% in 2003.

Figure 7: Masvingo Province cattle population 1990-2004 (source: DVS)

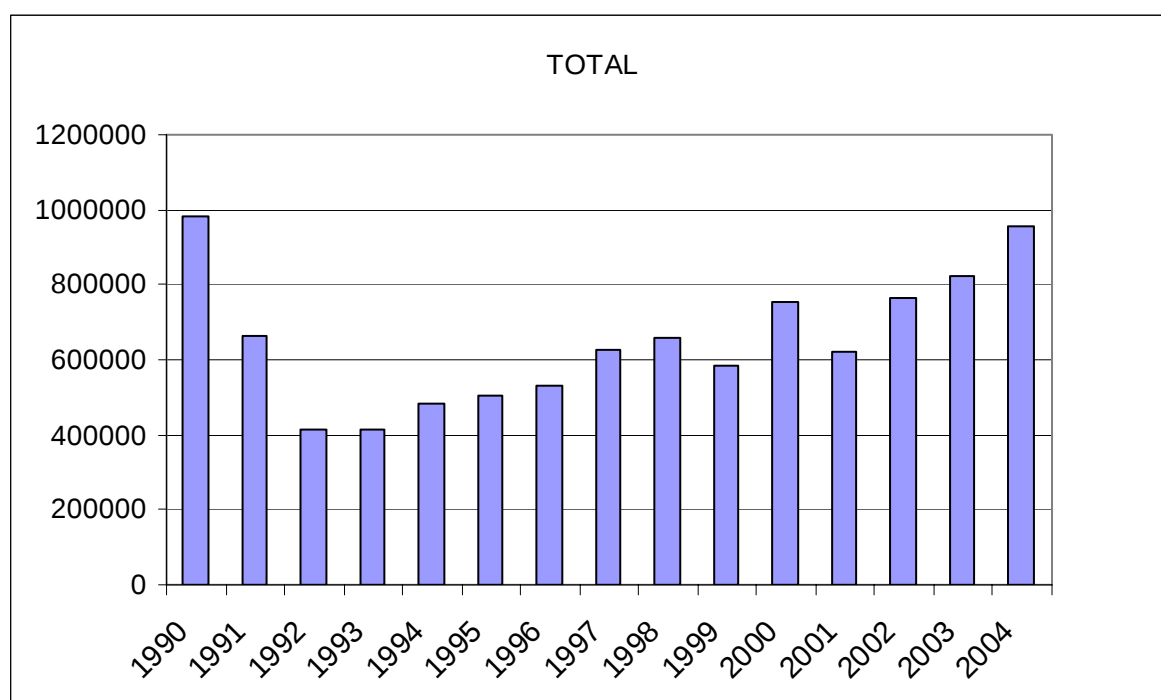
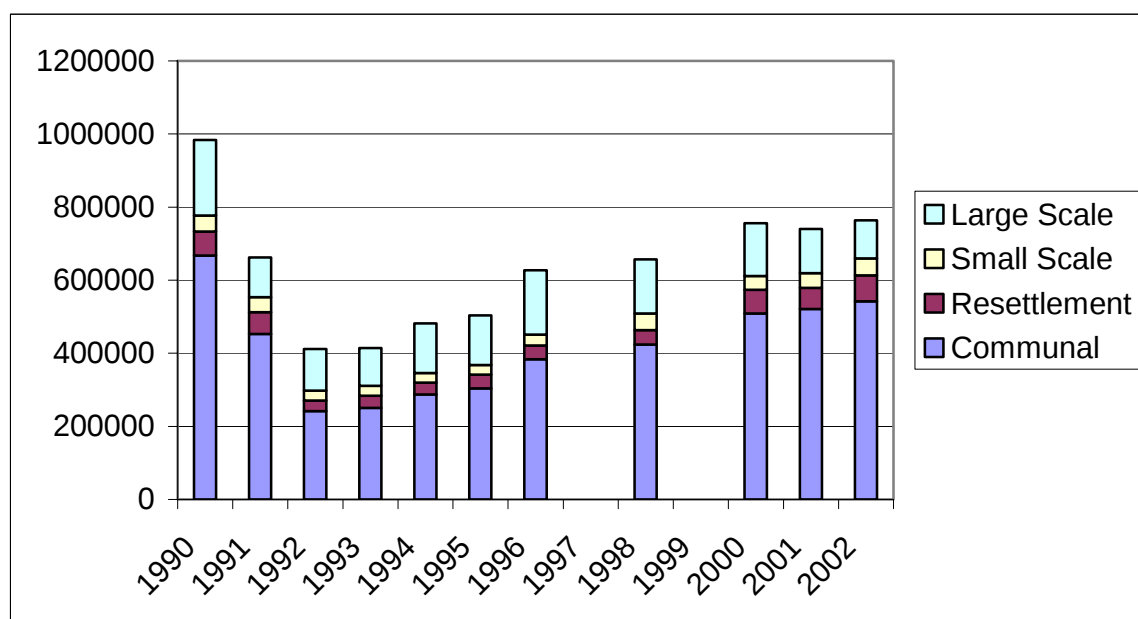
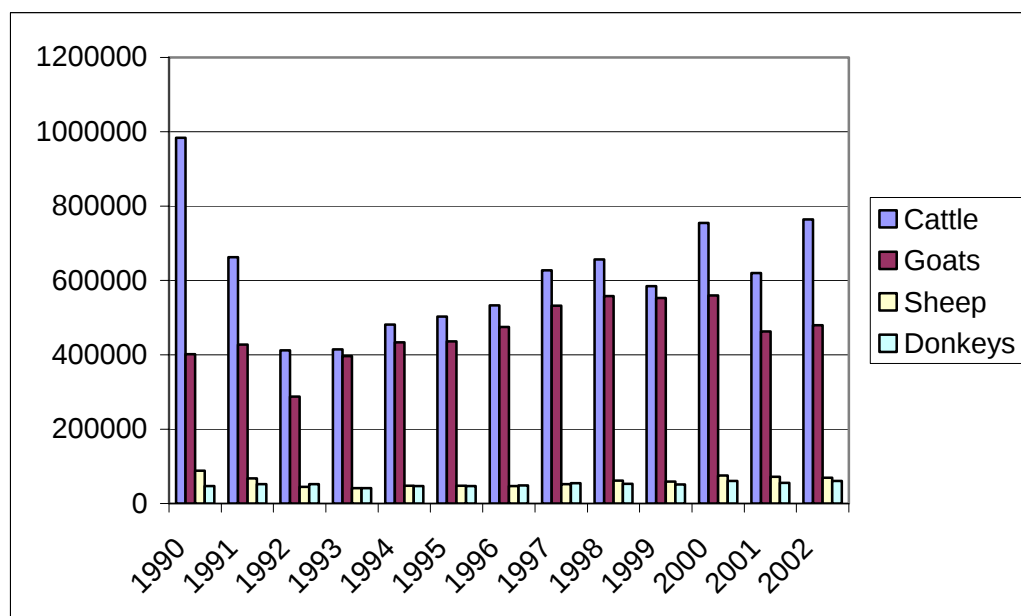


Figure 8: Masvingo Province livestock populations by sector (source: DVS)



Trends in other livestock (cattle, sheep, donkeys) have broadly mirrored these patterns seen for cattle, with all livestock categories suffering in the 1990s drought, although not as dramatically as cattle (Figure 9). Sheep and donkeys remain in the minority numerically, although donkeys are very important for draught power in certain areas. Goat numbers have shown a gradual rise after the 1990s drought dipping again in the drought years of 2001-2. Over 90% of the goat herd is in the communal areas with an increasing percentage in resettlement areas (4.7% in 2000; 8% in 2003).

Figure 9: Masvingo province livestock populations 1990-2002 (source: DVS)



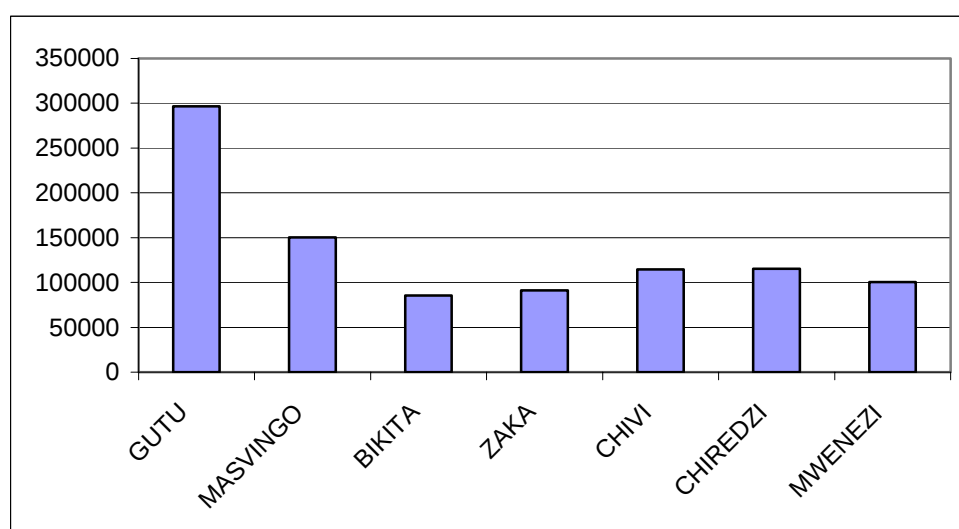
Livestock holdings are unevenly distributed across the province. Table 2 and Figure 10 show the proportion of total cattle numbers (953,666) occurring in each district. Higher densities occur in the wetter districts (especially Gutu), while more extensive patterns are seen

elsewhere. This reflects both the distribution of land uses (with larger, often enormous ranches being found in Mwenezi/Chiredzi) and of resource endowment and rainfall patterns.

Table 2: Land area and cattle holdings in Masvingo Province – December 2004 (source: DVS)

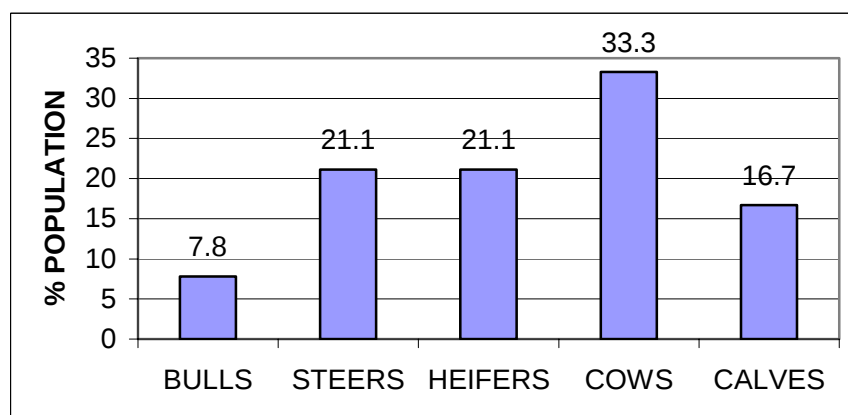
District	Land Area % in province	Cattle holding % in province
Gutu	12.5	31.1
Masvingo	12.1	15.8
Bikita	9.2	8.9
Zaka	5.7	9.6
Chivi	6.2	12.0
Chiredzi	30.6	12.1
Mwenezi	23.7	10.5

Figure 10: Masvingo cattle populations by district (2004) (source: DVS)



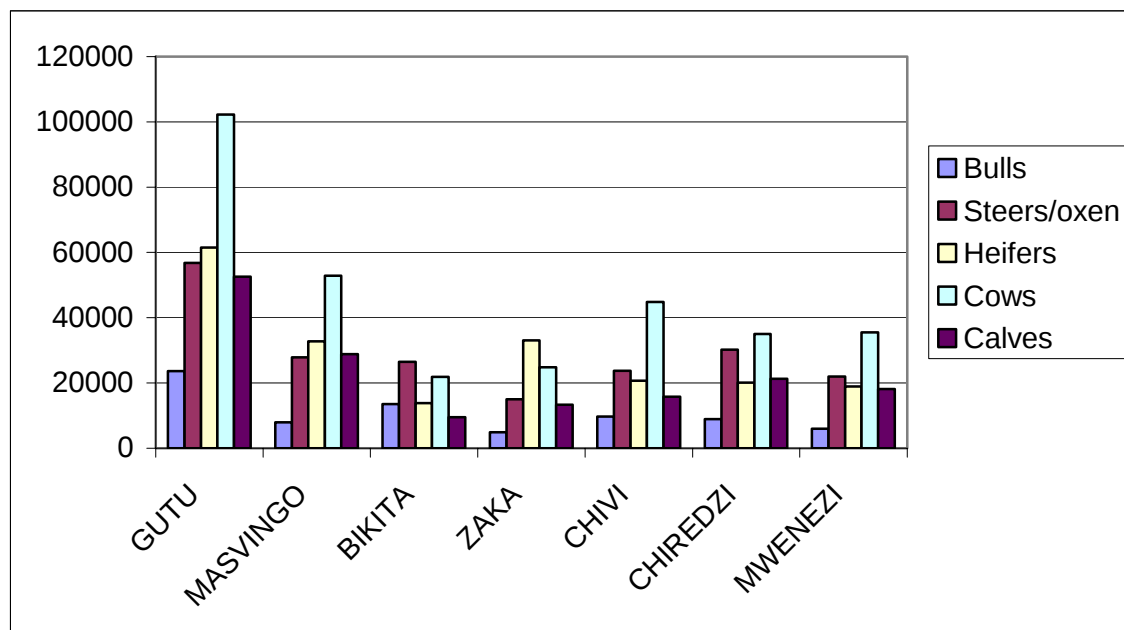
Overall, the herd composition is skewed towards female animals (cows and heifers), making up around 60% of the total population (Figures 11 and 12). The figures are dominated by the small-scale sector which, as already discussed, is focused on maximising herd numbers for multiple uses.

Figure 11: Cattle herd composition, Masvingo Province 2004 (%)



Source: Department of Veterinary Services, Masvingo Province

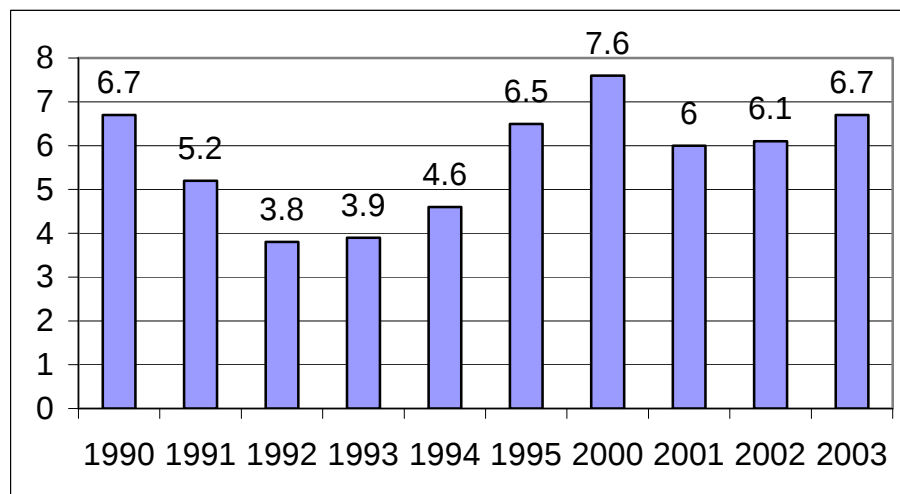
Figure 12: Cattle herd composition by district, Masvingo Province 2004 (total numbers)



Source: Department of Veterinary Services, Masvingo Province

As Figure 13 shows, livestock holdings at a household level have averaged around 6 over the last decade, with major declines being seen following the drought in the early 1990s. This was a period of extreme draught power shortage in the small scale sector, something which persists today.

Figure 13: Number of cattle per household, Masvingo Province

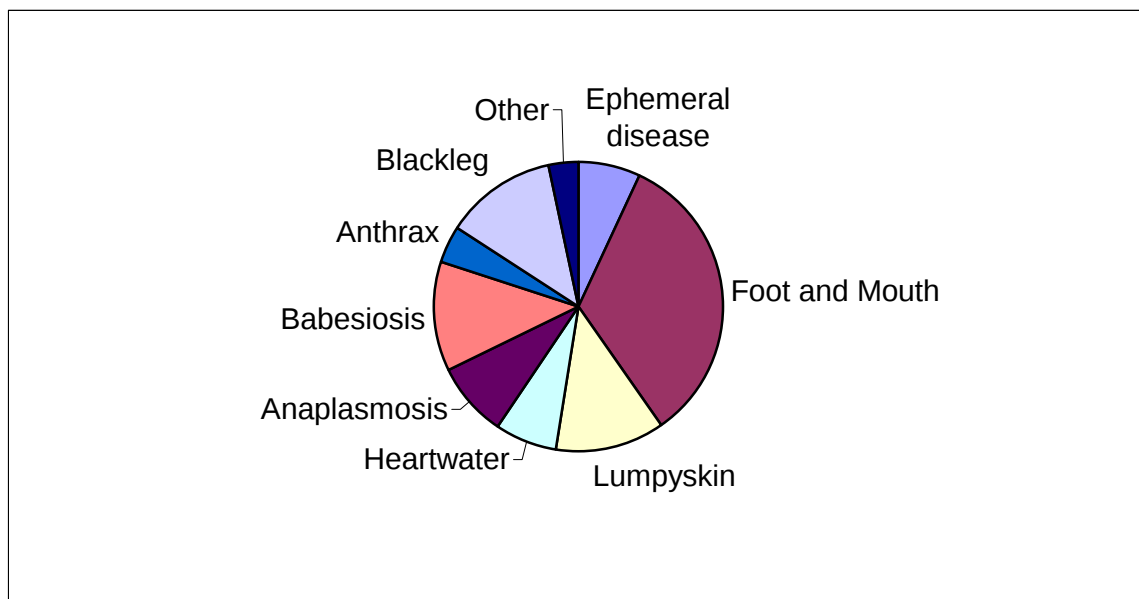


Source: Department of Veterinary Services, Masvingo Province

4. Livestock diseases

Recorded livestock diseases in the province are shown in Figure 14. FMD dominates the data recorded for 2004, followed by blackleg, babesiosis and lumpy skin disease. Figure 15 highlights the main reported and recorded diseases from Veterinary department data. This of course under-estimates less dramatic and more easily treatable conditions associated with worm infestation and parasites, and does not cover non-cattle diseases such as contagious pastular dermatitis of goats and Newcastle disease of poultry.

Figure 14: Recorded livestock disease, Masvingo province 2004 (source: DVS)



(NB: diseases included here under 'other' were malignant catarrh, botulism, theileriosis, coccidiosis, mastitis and brucellosis).

As discussed above FMD has become a major concern of late, but in terms of mortalities (Figure 16), it is blackleg and tick-borne diseases that have by far the major effect on cattle, as provincial data over a decade to 2004 shows. Figure 16 shows that blackleg and heartwater recorded by the DVS rose sharply between 2000 and 2002 – before dropping slightly and then rising again in 2005.

Figure 15: Provincial incidence of selected diseases 1995-2005 (Source: DVS)

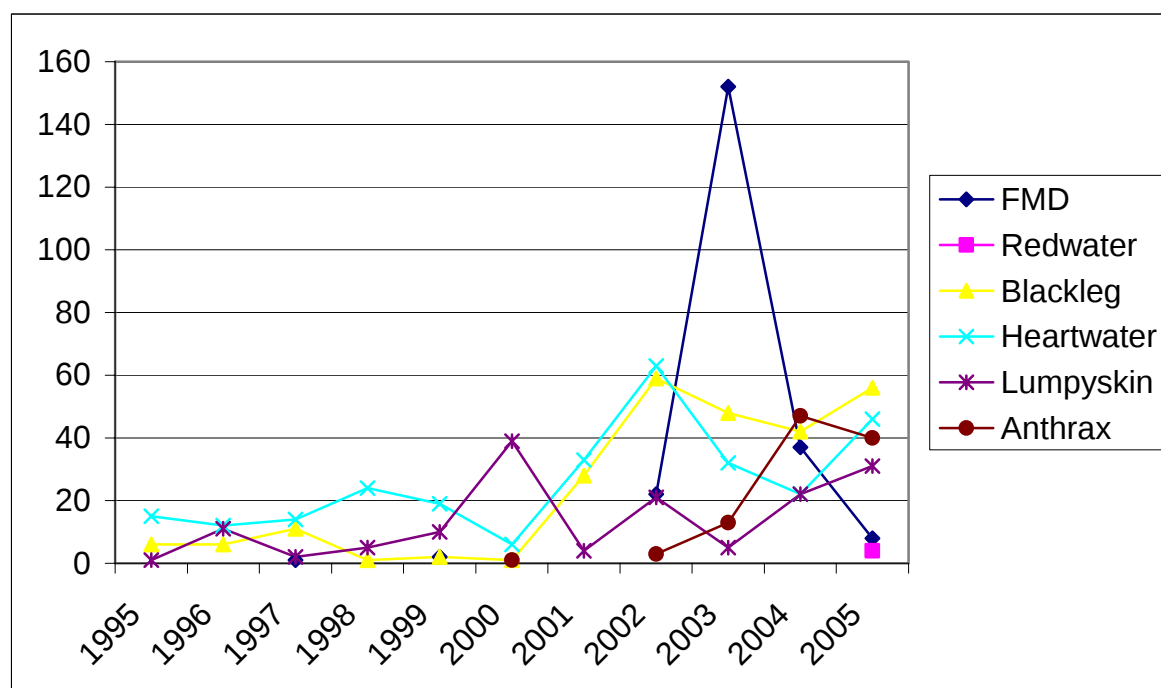
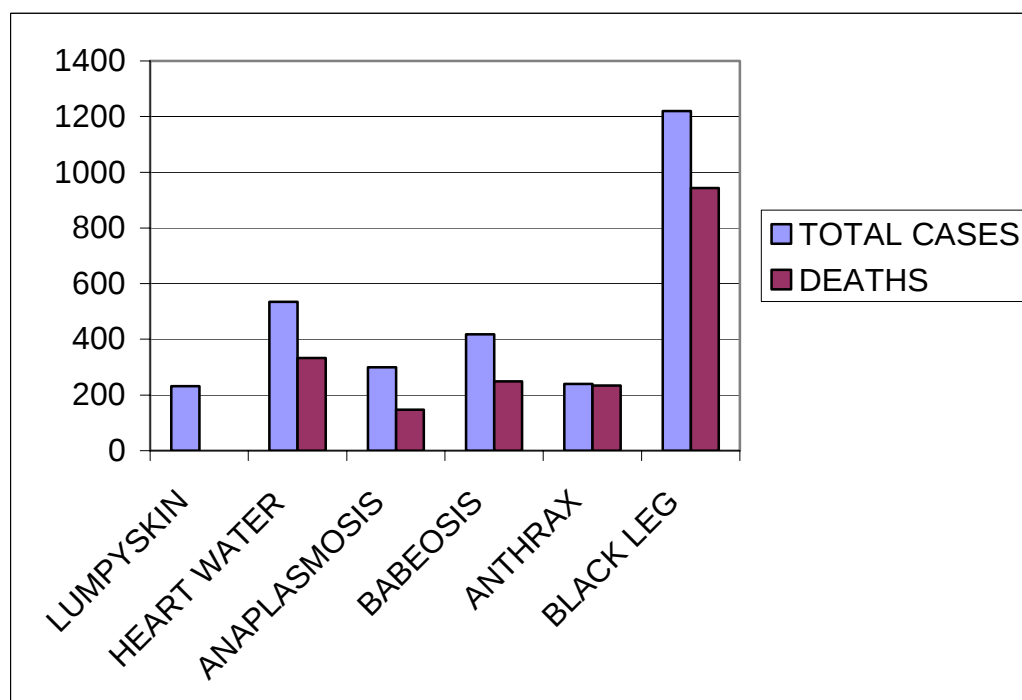


Figure 16: Total cases and deaths – main cattle diseases, Masvingo 1995-2004 (Source: DVS)



5. Case study clusters: sampling and overview

Three case study clusters - each made up of a series of sites with different land uses - were chosen for this study, with the aim of getting greater insight into the patterns and dynamics suggested by the aggregate data presented so far. To gain a sense of the range of conditions in the province the three sites chosen lie on a transect from the higher rainfall zone (National Region III) Chatsworth area of Gutu district to the Ngundu area of Chivi district (NR IV) and the Chikombedzi area of Chiredzi district (NR V) – see Map 4.

Two of these sites (Ngundu and Chikombedzi) were case study cluster areas from the 1997-2000 crop-livestock integration study (Wolmer et al., 2002). This earlier work had focused exclusively on the communal area system. However, for this study we added sites in each of the three areas to include adjoining A1 and A2 resettlement areas and remaining commercial ranches. Within each site the aim was to gain insights into the relations between sites – between communal areas, new resettlements and former commercial farms – in terms of movement of people, livestock and disease and in terms of patterns of production, input supply, service support and marketing. Building on the site and cluster specific analysis, the study also aimed to develop insights into broader district and province wide changes, particularly in respect of marketing arrangements, disease management, input supply and service support.

The three study clusters are centred on small, rural business centres:

- Chatsworth is a small business centre located about 58 km north of Masvingo on the Masvingo-Gweru railway line in Gutu district. Before land reform it was characterised by a relatively large number of comparatively small commercial farms. This was a legacy of larger properties being cut up as tobacco farms in the 1950s. These were a failure and many holdings came to be amalgamated as ranches and dairies. From the 1960s this was largely a ranching area controlled by relatively few families owning several of these farms each. The Erasmus brothers, for example, controlled over 100,000 ha on 12 holdings. It borders Serima communal land to the north east
- Ngundu is a busy truck stop and township in the granite *kopje* studded Chivi District on the main Harare to South Africa. Chivi communal area stretches way to the north-west and is bordered by a pre-2000 resettlement area on the DTZ owned Mwenezi ranch to the south. New resettlement areas line both sides of the Ngundu to Chiredzi road to the lowveld.
- Chikombedzi is found in the extreme south-east of the country in Matibi II communal area, Chiredzi District in the flat, dry lowveld bordering Gonarezhou National Park and the former cattle and game ranches – now resettlement areas – of Mwenezi District. It is in the FMD red zone.

Each is characterised by different **savanna ecology**, with implications for livestock production. Soil types range from the heavy basalt clays around Chikombedzi to granite-derived low soil fertility sandy soils in Chatsworth. Two broadly contrasting savanna types can be identified across the sites. First, a dystrophic savanna type is found in the sandy soil areas of Ngundu and Chatsworth, which is dominated by *miombo* vegetation (major species including *Brachystegia spiciformis* and *Julbernardia globiflora*) with a relatively poor quality, yet resilient, grassland of perennial species. Second, a eutrophic savannah type is found in the heavier clay soils of Ngundu and in the lowveld setting of Chikombedzi. Here *mopane* and *Acacia* woodland dominates, although a variety of other trees are important including

Colophospermum and *Combretum* species. The grassland in such savannas is of higher quality (e.g. in terms of crude protein content), although species composition is very variable, with major shifts between perennials and annuals occurring depending on rainfall.

In terms of primary productivity, the dystrophic savannah areas show a greater stability across time, despite similar rainfall variations. The relatively greater tree biomass in these woodland areas, and the infiltration properties of the sandy soils, allows grass to grow even in drought periods. By contrast, in the eutrophic savannahs much greater variability in primary production of grasslands, in particular, is seen. During drought periods, virtually no grass grows at all in such areas, and leaf fall and browse from trees is practically the only fodder available.

The quality of the fodder available shows some important contrasts again. In the dystrophic savannas, poor quality of both graze and browse is observed, although the phenomenon of the early pre-rains flush of new leaves in *miombo* woodland provides a temporally important source of relatively high quality (although tannin rich) fodder. This contrasts with the eutrophic setting where much higher quality fodder sources are found year round. *Mopane* leaves, for example, both green and dry, can provide important nutrition in times of drought (see below).

However, these broad characterisations of savanna type are not universal, as, within any area, different patches occur. These are the result of variations in topography and soil type, and, in some cases, human action (e.g. old kraal or settlement sites). So, within a low productivity, poor fodder quality dystrophic landscape, patches of high productivity and high quality fodder may be found. In such settings, these are typically along riverbanks, in drainage lines or in *vleis/dambos*. In eutrophic savannah areas, riverine strips are particularly important, as here the key moisture constraint may be relieved and high productivity potentials realised.

Ethnic origins vary with Karanga dominating in Ngundu and Chatsworth and Shangaan in Chikomedzi. But all the sites are ethnically diverse as a result of ongoing migrations. At times different ethnic groups have pursued different farming strategies.

Differing **infrastructural development** means that the clusters have variable access to markets. Chatsworth is close to the Harare-Masvingo road and Ngundu is located at a major junction on the main road to South Africa. The Chikomedzi cluster, particularly the Mateke Hills sites, on the other hand, remains relatively isolated from markets, as it is reached only after many kilometres of badly corrugated 'dust' tracks after leaving the tarred road. However given its proximity to the Mozambican border cattle and goat rustling has long been issue here – and particularly so in recent years (see part IV, section 10).

Table 3: Characteristics of each of the three clusters

	Chatsworth cluster	Ngundu cluster	Chikombedzi cluster
Rainfall	650-1000mm	550-800mm	330-660mm
Soil	Sand to sandy clay loams derived from granite	Mix of clay and sandy soils	Mostly black and basalt clays, some red clays and sands
Vegetation	Patches of <i>miombo</i> woodland: dystrophic savanna	Patches of <i>miombo</i> woodland, dystrophic savanna	Lowland <i>mopane</i> . Eutrophic savanna
Population density	28/km ²	44.5/km ²	14/km ²
Cropping system	Maize	Maize dominates, some sorghum/millet. Also groundnuts, sunflower, bambarra nuts	Sorghum, maize and groundnuts are important.
Cattle holdings	CA: 73% A1: 54% A2: 92%	CA: 48-61% A1: 38-65%	CA: 33-60% A1: 40-60% A2: 70%
Goat holdings	CA: 14-16% A1: 3-7% A2: nd	CA: 41-69% A1: 15-65%	CA: 44-61% A1: 38-86% A2: 20%
Donkey holdings	CA: 0-8% A1: 2-20% A2: nd	CA: 14-16% A1: 0-19%	CA: 7-16% A1: 0-32% A2: 40%
Own livestock for tillage	CA: 32-36% A1: 36-50% A2: 23% (plus tractors)	CA: 30-46% A1: 20-43%	CA: 23-53% A1: 34-84% A2: nd
Natural Region	III	IV	V

Source: Household census 2005

6. Case study sites: background and context

This section offers a brief overview of each of the sites within the three clusters. In order to understand current challenges and opportunities for livestock production, some socio-economic background in each setting is presented. This reveals the historically embedded relations between sites, with these inevitably influencing current interactions. Within each site a profile of a current resident is introduced. While no means 'representative' in any statistical sense, these profiles provide a window into some of the issues that individual people and their households face.

With some of the basic information presented for each site, Part II concludes with a listing of the key questions for the study and the study methodology, as an introduction to Part III which presents the empirical findings of the study

Cluster 1 - Chatsworth

Claire Farm - A1 'self-contained' model resettlement area

One of the former Erasmus ranching holdings, Claire Farm is now an 'A1 self-contained model' resettlement area with 42 plots of 40 ha containing individual arable and grazing area allocations. Claire Farm lies north of Chatsworth and east of Rufaro Mission. It was resettled in 2001.

R. is 41 years old and has two wives and five children. His grandparents came from Melsetter in Chipinge in search of land to farm and settled in Gutu. He was born into a family of 26 children. His father was a prominent businessman running retail outlets and a transport business across Gutu District. He was active in liberation era politics. R also joined the liberation war after a brief stint as a builder. His area of operations as a guerilla covered Bikita, Zaka and Masvingo. In 1992 he started teaching at Rufaro Mission. With the advent of the 'Third Chimurenga' he took the opportunity to settle on the neighbouring Claire Farm in 2001. He abandoned his former home in Chatikobo Zvavahera, Gutu where he had had two acres used mainly to grow maize. As a war veteran he became secretary of the committee responsible for vetting and settling people on the farms around Chatsworth. He was the leader of Operation Gariranoko – the successful operation to drive the former white farmers out of the areas where new settlers were located. He is currently the coordinator (formerly known as base commander) for Lonely and Granby farms. He cultivates 5 hectares and a 70m by 70m garden and has 12 cattle: two bull crosses, four Mashona cows, one Mashona ox and five heifer crosses. He owns 30 goats – bought from Tokwe Mukosi, Chatsworth and Gonye areas in Gutu in 2005 at an average of \$350000 each. Feed is supplemented with salted maize stover in winter and licks for cattle and goats. He sells on average five litres of milk a day at \$5000 per litre and is planning to improve his goat project and start poultry production. Relationships with people in the nearby Serima Communal Area have been strained to date, although are improving slightly. Settlers have experienced poach grazing, tree cutting, fence thefts, destruction of crops by encroaching cattle and poaching wildlife by communal area residents. However, Serima people have been helping at *humwes* (work parties) – carrying manure and suchlike. He also assists communal area neighbours by supplying trees and hiring his scotchcarts.

Lonely Farm – A1 villagised model resettlement area

Lonely Farm also formerly belonged to the Erasmus family and was divided into paddocked ranching units. It is located to the west of Rufaro Mission along the railway line to Masvingo. It is a villagised settlement model – meaning settlers received stands for homesteads in a 'village' area, with four hectares of arable in a separate block and communal grazing. It currently has 30 settlers.

J is 26 years old with one child. He works as a cook at Rufaro secondary school. He received a plot on Lonely Farm in 2002, having applied to the base commander after it had been surrendered by someone else. He has just one cow bought from Zimuto communal area and finds draught power shortage a constraint to his farming activities. Although he was able to hire draught power from Serima communal area, this was not enough to plough all of his field. He also grows vegetables for sale at Rufaro Mission and Masvingo – this is his main money spinner.

Northdale A2 resettlement area

The former 2,832 ha ranch belonged to H. Jovner known locally as 'Gambinga'. It was divided into 12 A2 resettlement plots ranging in size from 183 ha to 472 ha. All 12 settlers took up their plots and employ workers who reside at the new homesteads that are in varying degrees of construction. None of the owners (who include local administrators, businessmen, teacher, vet and a diplomat) stay permanently on their plots

Northdale is bordered by A1 resettlements (Hillsborough to North, Nuwejaar to South) and Chirumanzu communal area. In the immediate aftermath of the departure of the former owner '*jambanja*' activities such as the theft of fencing, maize, illegal cutting of timber and firewood, poaching, thefts from homesteads, continued – but relations with neighbouring communities are now described as good with neighbouring A1 settlers providing draught power and doing piece-work during weeding and harvesting.

Born in Chivi District in 1959, the new owner of Farm 7 belongs to Chief Zimuto's Ngara totem from where his ancestors were removed during the establishment of commercial farms in the colonial era. His father was born in 1910 and is still an active gardener in Chivi. They have six children (two boys and four girls). One child is studying electrical engineering and another nursing. Three are in secondary school. His farming experience was gained in rural Chivi where he grew up and in Gutu A1 resettlement area where he farmed for two years before being allocated the A2 plot in Northdale. At the time he was district administrator for Gutu and responsible for resettling people throughout Gutu. The former owner of Northdale was initially allocated subdivision 7 (the largest subdivision at 472 ha, incorporating his homestead) but he gave it up considering it to be too small and 'systematically stripped and destroyed the property' before leaving. By that time he had been appointed as a senior provincial civil servant and took up the plot. He inherited three of the former farm workers and employs three of their sons as temporary workers. His wife has now resigned from her civil service job to work full time on the farm.

Wards 5 and 6, Serima communal area

Serima communal area was, until 2000, surrounded on all sides by commercial farms – largely ranching and dairy enterprises. The inhabitants of Serima communal area unsurprisingly had various dealing with their neighbouring commercial farmers – for instance when Brahman and Hereford breeds were introduced from the farms in 1998. Today as there are ongoing positive and negative interactions with the new resettlement area – as someone from Matoto village put it: "We in Serima communal area provide new settlers with draught power. We collect firewood from the farms against their wish. They burn crop residues to prevent the same animals which plough for them from accessing fodder".

M has four children. She currently owns four cattle and four goats. Her first cow was bought in 1985, by 1992 she had five head of cattle – four of which died, leaving one ox which she exchanged for a cow. This cow and its calf died in 1995. She then bought a Brahmin and Mashona heifer – the present parent stock. She has only ever sold one heifer. Shortage of grazing area is a major problem, despite requests to government for more grazing land. The former neighbouring white farmer did allow grazing of livestock on his property providing the fence was not cut. Now she continues to poach graze in the resettlement area, although the new settlers are trying to prevent grazing on their plots.

Cluster 2 – Ngundu

Zivhu village, Chivi communal area

Zivhu is located only 5 km north of Ngundu and therefore close to a market and transport interchange. It has clay soils and relatively high rainfall for Chivi District. It is close to the busy main highway connecting Beitbridge on the South African border with Masvingo and Harare. This is a major hazard for livestock, and many have lost their lives. It does not share a boundary with any new resettlement areas.

R was born in 1942 in Chivi. He formerly worked in Shabani mine as a clerk and married in 1966. He has had eight children, five surviving. In the early 1970s he would plough the fields of his brother who lacked draft animals. Once his brother acquired draft power they would intermittently team up their animals to plough - an arrangement that suited both because of the different natures of their fields. However, in the severe 1991-92 drought all of R's animals died and his brother started providing free assistance in ploughing his fields. By 1995 R had managed to build up his own herd of draft animals again with a donkey and two cows in 1997 growing to a cattle herd of 17 by 2001. However, eight of these died in 2002 and a further two in 2004. With the birth of two heifers and the purchase of a third from a local farmer he currently has ten animals. He has sold cattle to a local butcher and cattle and goats to other local farmers. He gets milk from his cows and does not provide supplementary fodder for his livestock. The most serious cattle disease to afflict his livestock is Redwater, followed by Heartwater and Blackleg. Blackleg was more significant in the past. Dipping is less regular than in the past. Whereas cattle used to be dipped weekly, now it is once a month or even once every two months. More lucrative than livestock is crop production. He has four acres of arable on clay soils, growing maize, groundnuts and bambarra nuts. He applies cattle manure to his maize. His garden is more profitable than the field crops, yielding sugar cane, maize and vegetables – for home consumption and sale to raise money for school fees and uniforms.

Gororo village, Chivi communal area

Gororo village is a few kilometres east of Ngundu on the road towards Chiredzi near Renco Mine. It neighbours an area that is earmarked for flooding behind the Tokwe-Mukosi dam. The inhabitants of that area have been relocated to Magudu (see below). Some former local residents have also resettled under the recent land reform in Uswaushava, Zvemombe and Mwenezi.

K is 65 years old and has ten children. He has nine head of cattle. In 1999 he had four – there have been eight births in seven years and one died in 1999 and three in 2002 from redwater. He bought two heifers in 2000. He has recently sold an ox to Handemaak – a large scale cattle dealer – in 2005. All his goats died in 2000. He sees reduced grazing area – caused by overpopulation – as a major constraint. He supplements grazing for his animals with maize stover and lopping tree branches (including *Brachystegia* and *Mumveva*). Dipping is currently only happening once a month and dip chemicals are perceived to be under strength. He is buying his own dip and using a knapsack sprayer to apply it every two weeks.

Village 1, Nyahombe resettlement area

Nyahombe resettlement area was established in an earlier round of resettlement planning in the 1980s. It is a model A villagised resettlement area with a communal grazing area. In the recent turbulence accompanying the fast track land reform process the original settlers have been joined by what they refer to as illegal settlers who have settled in the grazing area, removed paddock fences and the veterinary fence separating the communal and resettlement areas and exerted pressure on grazing resources.

M. is 55 and has nine children. He also looks after the children of his deceased brothers – in all there are 21 residents in the household. He has no cattle of his own, but has five head on loan from a brother who works in South Africa. Given the proximity the Gororo area of Chivi communal area there are close interactions – people from the communal area sell vegetables in Nyahombe and people of both areas assist each other with draft power and in work parties. However, there is an on going dispute regarding settlement and 'poach grazing' in what is officially Nyahombe's grazing area. Water shortage – due to a broken borehole – has reduced dipping frequencies for his cattle. Although aware of the potential danger to his livestock he occasionally sprays his livestock himself with Carbaryl to kill the ticks.

Villages IA and IB, Magudu Ranch

Magudu Ranch was originally owned by the Cold Storage Commission. In 2000 it was settled in part by evictees from near Gororo in Chivi Communal Area to make way for the construction of the Tokwe-Mukosi dam. After 2000 it was subsequently also occupied by settlers 'invading' the area during the *jambanja* period. Subsequently these settlers were evicted to make way for an A2 resettlement. This caused much resistance, however, and the A2 settlers had their houses burnt down and were chased out – and Magudu was replanned as an A1 settlement to accommodate the earlier settlers.

A was born in Zaka in 1965, shortage of farming land caused his family to relocate to this area in 2004. He was allocated an A1 plot at Magudu in 2004. He was married in 1993 and has two children and works as a builder which is his most profitable income source before farming. His wife attends a Catholic Church. He owns three head of cattle including one Brahman bought from a neighbouring ranch and four goats. He ploughs three hectares growing maize, groundnuts and bambarra nuts. Communal area neighbours participate in work parties.

Villages 7b and 8 Uswaushava – A1 model resettlement area

This new resettlement area was first settled in 2000 – as elsewhere plots were allocated, in the first instance, by war veteran 'base commanders'. Subsequently the area was officially pegged into 50 ha plots but the settlement plan was not implemented as people resisted and continued to stay put in the villages they allocated themselves at occupation. Formerly this was part of the massive Nuanetsi ranch managed by Development Trust of Zimbabwe (DTZ). Today relations with DTZ are somewhat strained – particularly because of DTZ's prohibition of fishing at Bangala Dam. The neighbouring ARDA farm is source of steers and tractors.

M was born in 1962 in Mwenezi, educated up to Form 2 and married in 1998. He has two children and attends the Baptist Church. He moved to Uswaushava in 2000 at the start of the fast track land reform process in search of enough land for farming. The relative proximity to large townships at Chiredzi and Triangle was another advantage. He has a herd of ten cattle and sees Foot and Mouth Disease as the most significant livestock disease – because of its impact on his ability to market his livestock. He has sufficient draught power for his six ha of clay soil fields and last season grew cotton, groundnuts and bambarra nuts but no maize. He also grows vegetables for local sale and household consumption and does some local carpentry work.

Fair Range Ranch – A2 resettlement area

This section of Fair Range was formerly owned in a partnership between two farmers (Weinham and Engels). They grew cane in one irrigated portion, and ran game on the rest of the dryland area. The farm has been resettled by 39 new A2 cane farmers and Lot 1 has a number of subdivisions allocated to new six A2 dryland farmers. Offer letters for the dryland area were issued in 2002, and farmers settled over the following years. Most have invested in land clearance for dryland cropping, together with livestock production. Lot 1 of former Mapanza estate is bordered to the north and east by sugar farmers (also A2 settlers), A1 farmers in other parts of Fair Range ranch and the Malilangwe Conservancy/Maranaha game farm to the south.

New A2 settlers on Lot 1 come from a variety of different places and occupations. Of those (male) A2 farmers interviewed, one was from Gonakudzingwa, near Chikombedzi and owns a general dealers store; one was an ambulance driver at a mission hospital and originally from Gutu; one is a police inspector based in Masvingo originally from Chirumanzu; and one (now late) owned a transport company in Chiredzi whose wife is an Assistant District Administrator and take-away shop owner, originally from Chimanimani. In all cases labour had been employed and was resident on the farm. In some cases family members were also resident and overseeing farm management, in other cases either the husband or wife took control through regular visits. All had only experience one or two seasons of limited cropping (ranging between 2 and 10 ha) of maize, sorghum or cotton, none with much success. Interactions are largely with other A2 farmers in the area through the recently established Mapanza farmers' association. Interactions with cane farmers are focused on getting access to cattle feed, including cane tops and maize stover.

A former owner of parts of Fair Range is now resident on Maranaha ranch. He hires out his tractor for ploughing, and is a source of both cattle and goats for restocking. His workers are also nearby, and have been an important source of advice for some new A2 farmers. Sources of conflict in the area focus particularly around access to water. Some new A2 farms have water points, and those without water drive their animals to these farms, sometimes damaging fence lines in the process. Game is still reasonably prolific in the area, and wild animals stray from the conservancy and game farms to the new A2 settlements. This has resulted in numerous deaths of livestock, particularly goats.

R is originally from the Mutema area of Gutu district. He has 45 and for the last 18 years has been an ambulance driver for Morgenster Mission hospital. He has three children, two boys and a girl. He obtained an offer letter for his 170ha plot in August 2002, and began clearing land in 2003. So far he has cleared 20ha, and cropped 8 ha – 5 ha of cotton and 3ha of maize. The yield was very low due to late planting and drought. He has fenced about 2km of the farm only, and has been unable to put up any buildings because of on-going legal wrangles over the ownership status of the farm. This has resulted in outbreaks of violence with intimidation to his workers by hired thugs who came onto the farm. Currently he has to reside in the former Estate buildings, together with his 3 permanent workers and any casuals he hires. On the farm he has an engine for irrigation and watering, as well as a tractor, plough and trailer, and a Datsun pickup. He is investing all his cash in the farm from his job. But it is not enough. He has failed to get any loans. One bank he approached responded by saying "Giving loans to dryland farmers is like tying your money to wild buck. You are assured that you will never recover your money".

Cluster 3 – Chikombedzi

Batiti / Pfumari / Mugoyani / Chompani / Chanienga Villages, Matibi II communal area

Batiti, Pfumari, Mugoyani, Chompani and Chanienga villages are in the southernmost portion of Matibi II communal area and close to Chikombedzi township – a predominantly Shangaan speaking area. They border former commercial farms – now A1 resettlement areas to the west of the Mwenezi river and Sengwe communal area to the south. The villages are favoured by fertile black soils but regularly experience conditions too dry to grow maize. Shortage of grazing land has always been a significant issue.

B is an ex-combatant and former policeman from Batiti village. His father was a cattle rich immigrant to the area from Berengwe. He currently owns a herd of 28 cattle, 7 goats and 4 donkeys. All the cattle are kept in Sengwe Communal Area, where more grazing is available, in *kufuyisa* (loaning) arrangements with two different households. He uses his donkeys to plough. He has built up the herd from 4 cows in 1998. He bought more – some using the war veterans' dividend.. A cattle fattening operation he planned – buying stock feed from Chiredzi and fattening animals for sale to CSC – never came to fruition. B's main income-earning operation is his large garden (80m by 50m) fed by a borehole with a diesel pump and fenced. He grows maize and vegetables for local sale.

Villages 3, 11 and 16, Edenvale Ranch A1 resettlement area

A former cattle ranch Edenvale ranch was first occupied in 2000 – and many cattle disappeared to rustlers or ran wild. The former ranching family is still on the homestead in the property and engaged with local NGO projects including an orphanage. There are 18 villages on the ranch – its three diptanks serve 575 cattle and is also used by some from the neighbouring Chompani area in Matibi II communal area where the diptank borehole is out of order. There is a dip tank committee with chairman, treasurer and secretary. Members contribute money to pay for transport fares to Rutenga to buy dipping chemicals.

Basket weaving has become a popular income earning activity in this resettlement area given relative abundance of illala palm on former ranch plots.

S is an ex-combatant and base commander known as Comrade Swahlupanyana (confusion). He used to live at the confluence of the Chanyenga and Chompani streams and had a small stony field insufficiently large for his family (he has three wives). He was most recently married in 2001 when he paid lobola of two oxen and two cows and cash. He was part of the original farm invasions and became the overall base commander for Edenvale and Jabula Ranches receiving a 400m by 200m field with black basalt soil. Each former paddock is now a village. According to S the movement onto the new resettlement areas has caused much more disease incidence in his livestock – there are a number of wild cattle on Edenvale from the former ranch, harbouring disease. He has supplemented cattle grazing with *phombwe* dug from the basalt soils and cites udder infections due to tick bites and blackleg as the major health problems for his stock

Village 2, Turf Ranch A1 (unofficial settlement), Mateke Hills

The relatively remote Mateke Hills commercial ranches in Mwenezi District (but bordering Matibi II and Sengwe communal areas of Chiredzi District) were established in the 1950s as small hunting concessions known as 'shooting boxes' largely for South Africans.

Subsequently these were amalgamated as cattle, sheep ranches where water was available and game ranches where not. Turf ranch formerly belonged to Mr. George. There are now 3 villages on Turf ranch, each with less than 50 people. There is no official veterinary provision. Since July 2005 the diptank used by the former owner has been run by a management committee – ordering dip chemicals from Rutenga – dipping once a month.

A mixed denomination church has been built by settlers to serve: two Zion Apostolic Church missions, United Church and Free Methodist church members. The status of this resettlement area currently disputed because the occupiers are not official 'offer letter' holders and have been threatened with eviction by the District Administrator who has talked of turning the church into a garage for his cars.

M is a retired railway worker born in Phahlela, Sengwe communal area. He migrated first to Masukwe also in Sengwe in search of better farming land. In 1990 he moved to near Beitbridge but the soil type there turned out not to be satisfactory and severe drought occurred. His maize harvest failed but he was able to grow melons for sale in Beitbridge. He decided to move back to Makhanani in Sengwe where he received a large field. However when the opportunity arose to occupy land in Turf Ranch in the Mateke Hills during the land reform process in 2002 he seized it. He was among households that took advantage of the ongoing changes to occupy the ranch and settle themselves (two years after the first farm occupations). M moved with his 27 cattle and describes Turf as 'the most beautiful place where honey and milk flows'. This is on account of the favourable soils (*makawa*) which hold moisture very well. However, problems ensued when the cattle brought by settlers led to an unidentified disease outbreak that led to the loss of many of the settlers' cattle. Further insecurity ensued when Arex peggers came to mark Turf Ranch for official resettlement – using yellow paint to mark plots. This led to a stand-off with the District Administration with the unofficial settlers – who lack security in the form of 'offer letters' – fearing displacement by official 'plot holders'. The local councillor encouraged M and the other settlers to continue clearing their fields to show the Ministry of Lands officials that they were committed to farming this area productively.

Asveld Ranch A2 resettlement, Mateke Hills

This ranch formerly belonged to J – who also had a fruit farm in Inyanga – who has retained one of the plots on which he has 270 cattle. He is now joined by 10 A2 settlers with cattle holdings ranging from none to 121. During the 'jambanja' period the whole ranch was invaded by local people from Chikombedzi and Gezani areas. But many failed to get plots when time came to allocation, with some being sent to new resettlements near Masvingo. Most current plot holders come from nearby communal areas, including from around Chikombedzi. With the onset of rains in December 2005, many cattle were withdrawn from the area for ploughing at the communal area fields. Access to water is the main challenge on Asveld farm. This is unevenly distributed across the former ranch, and requires diesel for pumping. Some new farmers are able to purchase diesel and so water their cattle alongside the former owners' at 'new tank'. J also provides water, diesel and dipping drugs to five A2 settlers and arranging transport to take cattle to CSC in Bulawayo. In return he has negotiated access to their land to continue hunting with his safari clients. Several of the new plot holders have now applied for hunting licences themselves to be in a position to negotiate such deals officially. Some of the settlers lack offer-letters and land disputes are ongoing with a war veteran attempting to usurp one property.

Asveld ranch – a disputed A2 plot

One plot currently has two occupants. One without an offer letter and over a hundred animals and one with an offer letter with only 6 head. The larger cattle owner, who is also a war veteran, asks 'why should someone without cattle be given an offer letter on an A2 farm?' The legal occupant however says that he gained access to the plot by the formal means, and plans to build up his herd. He says he aims to get a loan from the CSC and purchase heifers. Both agree that livestock keeping on Asveld ranch is not easy. Indeed, very few of the animals from either owner were present during a visit in December 2005, as they had been withdrawn for ploughing in the communal area villages, or moved to places where water was more easily available. One complained: 'transport is difficult here, especially in the rainy season. There is just mud and no vehicles can get here'. He went on 'diesel fuel is not available too, and that makes pumping water impossible'. He argued that instead of cattle his plan was to go in for licensed hunting, which does not require such infrastructure. When present the animals of both individuals are kraaled near a homestead site which was built by the former ranch owner. This has good kraals, some accommodation and, critically a functioning pump for watering animals. Until the disputed ownership is resolved neither party is willing to invest much the new A2 plot. While the large cattle owner argues he has a right (as war veteran, as owner of cattle) to the land, the other claimant argues that due process must be upheld, and argues that the District Administrator's Land Assessment committee will resolve the issue in his favour. Quite who has authority over land and resources is as the case study shows, very unclear. In practice, complex day-to-day negotiations are the basis of most people's strategies at the moment.

Across these study areas a series of themes of investigation were explored, many highlighted by the testimonies of the individual people profiled in boxes above. The next section outlines the methodology for the field study.

7. Key questions and methodology

As indicated above, the study design was across multiple scales: from 14 individual sites, across 3 clusters in 3 districts in 1 province. A multi-scale approach was aimed at engaging with both patterns at different scales, but also, significantly, dynamics and relations between them. A central proposition of the study has been that the land reform exercise, through fundamentally altering the pattern of land and livestock ownership, has affected the dynamics of livestock production, marketing and disease control in complex ways. These will not be understood by reliance on aggregate statistics or even site specific case studies, but will emerge only through an analysis of relationships between sites and across scales.

The study initially focused on seven areas of enquiry, elaborated in a checklist with a central question and a series of sub-questions. For the study as a whole the guiding question was very simple:

How has the livestock sector changed in Masvingo province since 2000, with what implications?

The detailed checklist is contained in Appendix 1; this elaborates the following questions relating to the seven themes:

- i) Livestock holdings - What does the provincial livestock holding look like now? How does this differ from before?
- ii) Herd/flock establishment – How are herds and flocks being re-established now?
- iii) Livestock output - What is the current pattern of output, through what marketing systems? How does this differ from before?
- iv) Disease/vet issues - How have changes in land use/ownership – and associated shifts in livestock economy – resulted in changes in livestock disease, and challenges for their control? In respect of foot and mouth disease - Given land reform, do FMD options look different (compared to the conventional model of fencing, movement control etc.)?
- v) Fodder and feed - Has land reform affected patterns of access to grazing and feed resources? And if so, for whom?
- vi) Livestock and wildlife - Livestock-wildlife interactions: harmony or conflict? Is there a changing relationship between the livestock and wildlife economies after land reform?
- vii) System interactions - How have the linkages/connections/interactions in the livestock economy changed? With what effects, and for whom?

Clearly for a time and budget constrained study of this sort, full answers to all of these questions was not possible. However, the study aimed at gaining insights across the range, using the comparative approach between sites and clusters to gain insights on emerging patterns and trends.

In terms of methods, the study included a number of approaches, including:

Group discussions at site level

11 group discussions were convened at village level (see list below), involving both men and women and with attendance ranging from 10 to over 60. Group discussions allowed for an open-ended discussion of issues, as well as the opportunity for the field team to gain insights into the particular settings of each site. The checklist above was used to prompt lines of discussion, and the discussions were recorded in notebooks.

- Serima – ward 5, Mudzimu village (12 persons)
- Serima – ward 6, Mototo village (23 men; 40 women)
- Claire farm A1 management committee (8 persons) 6 July 2005
- Lonely farm – village 2 group discussion (5 persons) 7 July 2005

- Gomana village (Zivhu) (20 men, 10 women) 28 July 2005
- Tibha village (Gororo) (25 women; 20 men) 29 July 2005
- Nyahombe resettlement (10 persons)
- Magudu villages 1a and 1b (30 women; 20 men)
- Turf ranch, Mwenezi (16 men; 21 women)
- Edenvale – Village 16 (5 men, 3 women) 18 December 2005
- Usuwashava – Village 7b (25 men, 2 women) 20 November 2005

Group discussions were not held at the 3 A2 sites – Northdale, Fair Range and Asveld - but with individual A2 farm owners/managers were interviewed to gain an overview of the area.

Village census and survey

For each village site a few key informants volunteered to assist with a village wide census. This involved creating a village list of all households (cross-checked with village committee records) and provision of household specific data on a) cattle holdings; b) goat holdings; c) sheep holdings; d) donkey holdings and e) land preparation practices in the last season. In some cases, particularly for smallstock, information was not available through the census method. Sometimes too confusions arose between data on 'holdings' and 'ownership', especially if animals had been borrowed in or loaned out, or where herds were split between two sites (e.g between a new resettlement home and another home in the communal area). A certain amount of cross-checking of the data was possible (e.g. through individual household interviews, and follow up discussions) and the data was found to be broadly accurate, certainly sufficient to provide a general village wide picture. The census was in turn used to sample for household interviews, with 4 cases being chosen representing different cattle owning groups – 1 from the group of households with large holdings (top quartile), 1 from those with low holdings (from the bottom) and 2 with middle-level holdings (the majority of those with cattle). Non-cattle owners were also interviewed (see below).

For A2 sites (Northdale, Asveld, Fair Range), the census was carried out across all new A2 farms on the former commercial property, based on a key informant interview with one or two of the new residents. Since A2 farms in particular are in such flux and there does not exist the same committee structure as in the A1 resettlement areas, this data was the most difficult to gain and cross-check, and inaccuracies inevitably remain.

Individual case studies

Based on the sampling from the village/farm censuses, a series of cases were chosen (on average 4, on occasions more, and in the case of A2 farms less). Interviews with individual households (usually via the resident household head, often with other members of the household present) focused on a) perspectives on the checklist of issues listed above; b) individual household livestock holdings and land preparation practices, cross-checking census data; c) herd inventory, movements in and out of the cattle and goat herd/flock since 1999, including births, deaths, purchases, sales, thefts, lobola/loans etc. (in and out); d) herd/flock age/sex/breed structure.

Again data collection was highly successful, with only a few informants being unable to provide detailed recall data or being reluctant for other reasons. This detailed household level data provided a useful quantitative complement to the village level discussions, and largely supported the qualitative insights derived from this source.

Cluster level interactions between sites

An important element of the study was to gain insights into forms of interaction – both positive and negative – between the sites within a cluster, and implications this had for livestock management and production and marketing and service delivery. This information was derived through the village level discussions (i, above), and individual interviews (iii), but also was generated by other discussions in the area (with extension officers, local government officials, veterinary department officials, input suppliers, teachers, shopkeepers and others). A timeline of the evolution of each of the new resettlement sites (see above) also helped to get a sense of how interactions have emerged over time.

Changes at a provincial level

Broad changes in land use, disease incidence and the livestock sector in general (including census figures) have already been presented, and were derived from data compiled by provincial/national offices of the Department of Lands, ARES and Veterinary Services. In addition, surveys focused on marketing were carried out in a number of urban areas/rural service centres, including Masvingo (town/township), Chiredzi, Gutu/Mpandawanda and Ngundu. Surveys of butcheries were conducted, including interviews with key retailers and wholesalers. In addition interviews were carried out at abattoirs (in Masvingo and Chiredzi), input/drug/vaccine suppliers (in Masvingo, Chiredzi and Gutu) and with veterinary department, wildlife/parks and ARES officials at all levels, from field to district to province. Interviews were also conducted with CFU officials, former/current commercial farmers, wildlife producers and others to get a sense of changes in the commercial sector, and to cross check these perceptions with other data.

Despite the inevitable limitations of field data collection under conditions of rapid change, based on extensive experience over the past 20 years of working in Masvingo province on field surveys of this sort, our sense is that the data presented here are robust and informative. Gaining access to information under current conditions is of course not always straightforward, and biases are almost always present. Cross-checking, triangulation and ground truthing is thus essential, and this was carried out in a systematic and thorough manner during the study. The field team which conducted the majority of the field study have solid trust-based relationships in many of the study areas where this work was conducted, based on engagement with these areas over many years. In other areas, contacts and connections assisted with the quick establishment of new relations which allowed the work to proceed smoothly. The study was greatly assisted by the support of key members of the Departments of Veterinary Services, Livestock Production and ARES in all areas, together with the District Administrators and staff in Local Government.

Part III: Findings

Part III of this study presents the detailed findings from the case study site investigations, and provides a preliminary exploration of the implications of these for the broader questions of policy outlined in earlier sections. The findings are presented in 11 parts - Livestock holdings; Restocking – livestock accumulation; Livestock productivity; Livestock breeds; Crop-livestock integration (including land preparation and draught power and manure access and fertility management); Grazing and fodder management; Drought response and coping; Livestock diseases; Meat marketing; and Interactions with the former commercial sector – new deals. These add up to some broader conclusions which are presented in Part IV.

1. Livestock holdings

The percentage of households owning cattle averages 49.2% across the communal area sites and 52.1% across the A1 sites³², with the range being between 33% and 73% (see Table 4). Within sites there is commonly a highly skewed distribution among cattle owners, with ranges between 1 and 38 across all the communal/A1 sites. A2 farmers have begun stocking their farms with animals, with an average herd size of 29 in Northdale and 57 in Asveld.

Goat ownership is highly variable across the sites, with higher holdings percentages and flock sizes in the drier Chikomedzi cluster. Fewest goats are held in the Chatsworth cluster, with the lowest percentage holdings being on the new A1 resettlements there. Donkeys ownership appears to be site specific, with some sites having larger numbers (e.g. Nyahombe resettlement) and some none at all (Serima ward 6, Magudu villages 1 and 2 and Edenvale A1 village 1).

³² These figures include the Nyahombe, an old resettlement area, in the communal area category and Magudu in the A1 category.

Table 4: Livestock ownership patterns across sites

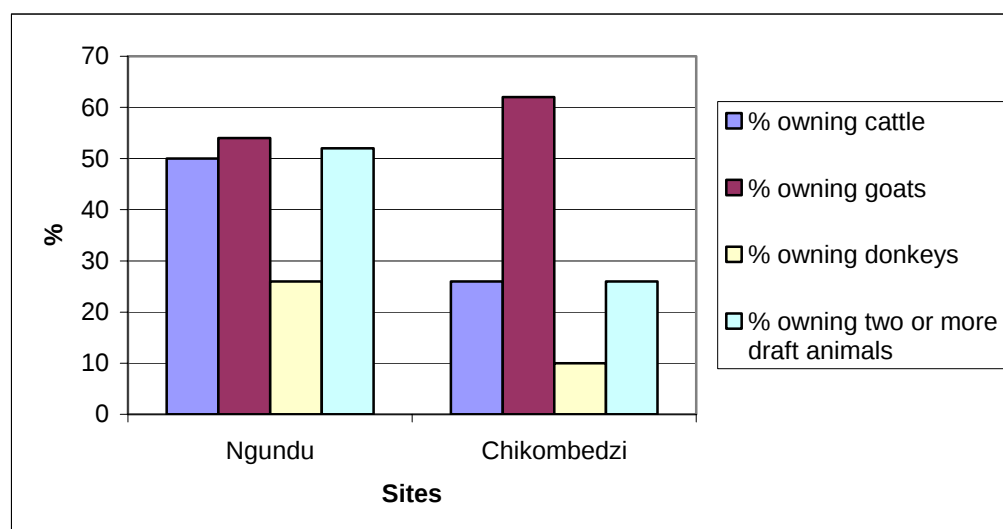
		% cattle	% goats	% donkeys	Av cattle	Av goats	Av donkeys	Rge cattle	Rge goats	Rge donkey	N
Chatsworth cluster	Northdale A2	92			29			5-96			12
	Clare A1	55	7.1	2.3	8	12	(1)	2-26	2-30	(1)	42
	Lonely A1	53.3	3.3	20	7.1	(1)	2.5	1-20	(1)	1-4	30
	Serima W5	72	16	8	7.2	3.25	2	1-38	1-5	2	35
	Serima W6	72.7	14.1	0	2.7	3.1	0	1-12	1-7	0	99
Ngundu Cluster	Nyahombe RA	100 ³³	56	52	10.24	6.8	3	1-37	2-16	2-6	25
	Zivhu	61	69	16	3.4	3.7	0.4	1-20	1-23	1-4	67
	Gororo	48	41	14	2.2	1.3	0.3	1-12	1-6	1-3	44
	Magudu 1	38	45	0	3.6	2.8	0	1-12	1-4	3	29
	Magudu 2	53	47	3	3.6	2.8	0	1-12	1-4	3	30
	Ushauwhava V8	64.9	64.9	18.9	4.1	4.6	0.4	1-17	1-15	1-4	37
	Ushauwhava V7b	55	15	10	3.9	1.2	0.3	1-24	2-16	2-4	20
Chikombedzi Cluster	Turf A1 V2	40.6	37.5	15.6	6.7	4.7	5.4	1-27	1-18	3-8	32
	Turf A1 2	50	50	32.1	4.8	2.4	1.8	1-24	1-19	1-16	28
	Asveld A2	70	20	40	56.6	19	4.5	6-121 ³⁴	8-30	3-7	10
	Edenvale V3	45.5	63.6	18.2	6.6	4.7	2.5	4-13	1-10	1-4	11
	Edenvale V11	58.3	50	0	4.9	6.3	0	2-9	4-10	-	12
	Edenvale V16	60.1	85.7	19	7.9	6.2	0.6	2-30	1-19	2-4	21
	Pfumari	32.8	45.7	7.1	5.9	3.7	2.6	1-40	1-11	1-4	70
	Batiti	60	61	10	4.4	3.9	0.3	1-35	1-20	1	62
	Mongayani	44	39	7	2.7	2	0.3	1-30	1-15	1	57
	Chompani	43	44	16	3.1	2.6	0.6	1-28	1-20	1-8	108
	Chanienga	58.8	52.9	2.9	9.4	12.5	1	1-34	3-51	1	34

Compared to 1998 overall patterns of livestock ownership in the communal area study sites in the two clusters (Ngundu and Chikombedzi) where earlier studies were undertaken are comparable (see Figures 17 and 18). On average cattle ownership has increased in Chikombedzi and slightly increased in Ngundu. Goat ownership has remained virtually unchanged in Ngundu and decreased in Chikombedzi. Donkey ownership has also declined in Ngundu and declined slightly in Chikombedzi, although the total ownership levels were never very high.

³³ This includes loaned animals

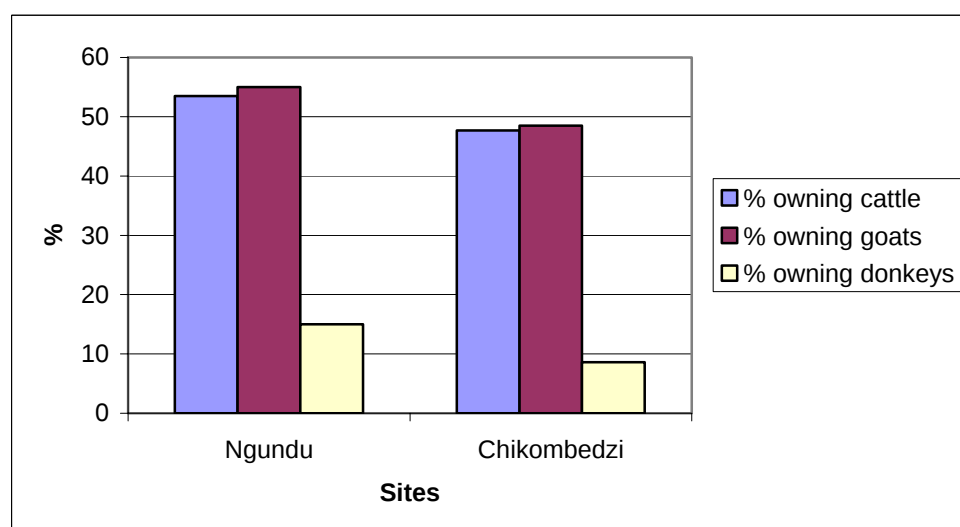
³⁴ This figure excludes the former owners' 270 cattle still on property.

Figure 17: Livestock ownership 1998



Source: Wolmer et al (2002)

Figure 18: Livestock ownership 2005 (CA sites only)



Source: survey data

Contrary to some reports, the new A1 resettlements do have significant cattle holdings. In our study sites these are actually higher than on the communal areas (averaging 5.4 compared to 4.1 in the communal area sites³⁵). Stocking of the new A1 settlements has been on-going since 2001, and many animals from the communal areas have been transferred or acquired, if not registered on official stock records. This has been particularly the case for cattle and donkeys, which are so critical for draft and transport. Smallstock have been stocked less consistently to date, as the dangers of theft and the difficulties of herding on the new resettlements are constraints. However it is important to remember that stocking rates may differ dramatically between different times of year, with animals being moved into the resettlement areas during the dry season as fodder supplies decline in the communal lands, and later for the ploughing period.

³⁵ Nyahombe old resettlement is included in the communal area figure and Magudu in the A1 figure.

Within A1 villages the pattern of ownership resembles that in the communal areas, with a few larger owners, and a longer tail of those with small herd sizes. This reflects the diverse socio-economic status of those on the new resettlements. These include both the very poor, with few assets who joined the land invasions out of desperation as they saw little future in the communal lands, and those who committed to new resettlements with assets brought from the communal areas, or from town, as they believed in the potentials of new opportunities that access to land would bring. Thus, as in the communal areas many herds in the A1 resettlement areas are below the size feasible to put together a plough span, and such households, together with those without cattle at all, must rely on others' animals to borrow or hire (see below).

Smallstock and donkeys are more unevenly spread across the sites. In the communal area sites 38.3% own goats, and the average holding is 3.6; in the A1 sites 42.6 % own goats, average goat holding is 4.4. In the communal area sites 8.1% own donkeys in communal area sites and average donkey holding is 0.75; in the A1 sites 12.6% own donkeys and the average donkey holding is 1.3. As with cattle holdings the new resettlement areas thus have higher smallstock and donkey holdings than the communal area sites.

2. Restocking – livestock accumulation

Over the last few decades farmers have had to restock their herds on a number of occasions due to the effects of drought or disease (see case studies in boxes 1 and 2). In particular the periods following 1981-84 and 1991-92 saw significant new investments in cattle in particular. In Chiredzi especially following 1991-92 when so many cattle died, people also invested in goats and donkeys. With such widespread livestock mortalities in both periods – 75% in 1982-84 and 41% in 1991-92 in Chivi District (Scoones et al., 1996) – farmers had to seek new stock outside their own areas. In ranking exercises, informants noted the importance of commercial farmer/traders who sold heifers as key, although this practice has declined of late as commercial farmers have destocked and former ranches have been resettled it is still significant (see Table 5).

Sources of finance for livestock purchases have also changed over time. In the 1980s, crop sales were relatively most important, particularly following the good harvests of 1984-85. Up to the 1990s, a fairly standard pattern of cattle accumulation occurred in communal area household. Typically, first cattle were acquired following a spell of migrant labour relatively early in the domestic cycle and were a herd was accumulated during a period of male employment before disposals being made for school fees and the marriage of daughters. As long as herds were not hit by drought and disease during the accumulation period, this proved a reasonable resilient investment, and by the time husbands returned to farm full time some had significant herds, sufficient to loan out to friends and relatives, and in time to pass on to sons (Scoones, 1990). While of course there were numerous variations on this pattern, this was broadly what happened until the 1990s when a number of major changes occurred affecting both livestock and the broader agrarian economy.

As has been well documented (Scoones et al., 1996), the 1991-92 drought was in many respects more catastrophic than those that preceded it, despite it not being as dramatic in simple climatological terms. The reasons were multiple. Structural adjustment was just beginning to bite, with retrenchments and declines in real wage levels feeding through into decreases in remittance incomes. Restrictions on cross-border migrancy were apparent, with borders to South Africa and Botswana being difficult to cross. As the crop-livestock study showed changes in the status of migrant labourers (they were now mainly illegal 'border jumpers'), changes in the type of work being undertaken (farm work and urban odd-jobs replacing mining) and increased competition for work all contributed to the diminishing

buying power of returned migrants. It was more common for young men to return with consumer durables, such as radios and mountain bikes, than with enough money to invest in cattle (Wolmer et al., 2002).

Resource constraints within and beyond the borders of the communal areas affected the ability of livestock to find relief grazing. With commercial farms occupied or resettled, and boundaries enforced, flexible grazing as carried out in the 1980s was less feasible. Within the communal areas, growing congestion and reduced grazing lands meant less and less available resources, including critically browse resources, were available. In other words, the resilience of the system was increasingly being threatened.

Since the mid 1990s, this has got considerably worse. All the factors mentioned above remain, but are increasingly harshly felt in the communal areas. The decline of the formal economy since 1997, and particularly since 2001 has meant that relatives resident in urban areas are no longer sending remittances. The classic demographic cycle of a family accumulating and disposing of assets over time is no longer possible for most. This is particularly so because of the devastating impacts of HIV/AIDS (with an estimated adult HIV infection rate of 24.6%) which have caused significant mortality³⁶ among particularly that age group of men (and women) who before would be accumulating livestock at the household home. Instead family expenses have been diverted to medical expenses and funeral costs, and away from productive investments.

Livestock purchases among the individual case study households (excluding A2) was limited in the period from 1999-2005, averaging just 12.3 per year across 68 households, or only 2.4% of the total herd. Purchases were highest in 1999 (at 5%) and lowest in 2001 (at 1%), correlating with the success of crop harvests. Other sources of livestock accumulation for non-A2 farmers were lobola (a total of only 21 animals over five years) and loans/exchanges to the household (total 82 over the period, or 2.7% of the total herd). Data was more limited for A2 farmers. Of the case study farmers interviewed, all had purchased cattle in the past two years, with between 10 and 20 animals having been acquired. As with the communal and A1 resettlement farmers, the focus had been on the purchase of young female animals aiming at herd building through natural growth (see below).

Outside the A2 farmers, no case was reported of formal loans being accessed for the purchase of livestock. While some were aware of Agribank/CSC initiatives from newspaper reports, none had approached the banks and other loan agencies and all dismissed these options. A trader from Lundi commented: "We have no finance for our business. These loans are only for the big people. You need a shop, a car or something. What about the small guy? We get nothing"³⁷. An A2 settler in Fair Range, Chiredzi was told by the bank he approached: "giving loans to dryland farmers is like tying your money to the leg of a wild buck – you are assured that you will never recover it"³⁸.

In village meetings, the sources of funds for livestock purchase were ranked across the clusters as shown in Table 5.

³⁶ An estimated 170,000 died from HIV/AIDS in 2003 (http://data.unaids.org/Publications/Fact-Sheets01/zimbabwe_EN.pdf)

³⁷ Interview, RR and colleagues, Lundi Bridge, 21 November 2005

³⁸ Interview, A2 Fair Range, December 2005

Table 5: Sources of funds for livestock purchases: rankings by cluster

Income source ranking	Chatsworth	Ngundu	Chikombedzi
Agriculture/gardening	2	1	1 =
Employment	1	2	1 =
Livestock sales	3 =	3 =	3 =
Heifer exchange	3=	3 =	
Exchanged for goods e.g. with bicycle	5		
Sale of mopani worms etc			3 =

3. Livestock productivity

Assessments of herd productivity were carried out during the individual household interviews across a sample of 67 households, comprising a total of 730 cattle in 2005. Attempts at doing the same for smallstock and donkeys were abandoned due to poor recall of data and a limited sample size. For cattle some of the key parameters are shown in Table 6.

Table 6: Birth and death rates of cattle, 1999-2004 (%age of total herd)

	1999	2000	2001	2002	2003	2004
Birth rates	14	13	7	13	11	14
Death rates	8	5	4	7	7	5

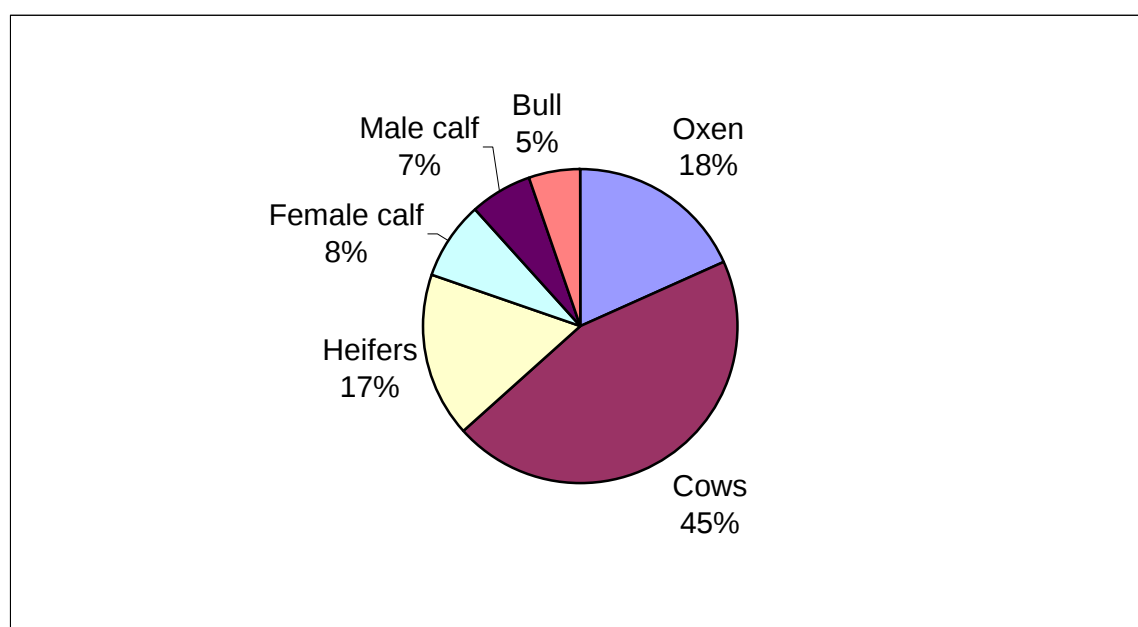
Birth rates fluctuated between 7% and 14% across the 6 years between 1999 and 2004, and averaged 12%. Data for the resettlement areas was only available from 2001 and so comparison is difficult, but it appears that at least for the years since 2001, birth rates across the sites are broadly comparable. Compared to other sources of herd accumulation, births were by far the most important. At an individual level, productivity was not high. According to informants the age of first calving was around 3 years and calving intervals averaged 18 months, but with wide variation between animals. Reconception rates were high, particularly in local indigenous breeds, allowing a relatively rapid rebound following drought particularly following the good rains of 2005-06. Although no detailed animal-specific data was collected beyond a few case studies, the pattern observed in this study is broadly comparable to that found in previous studies of communal and resettlement area cattle in southern Zimbabwe (see Tawonezvi, 1989; Hall, 1998; Scoones et al., 1996).

Death rates also fluctuated, in this case between 8% and 4% across the 6 years, averaging 6%. They were highest in 1999 and lowest in 2001 (despite this being a drought year, presumably because deaths recorded were from non-drought causes, including increases in

tick borne diseases). Data for the resettlement areas was only available from 2001 and so comparison is again difficult, but it appears that, at least for the years since 2001, death rates too across the sites were similar.

Herd structures (age/sex) also did not differ significantly across the sites and the overall picture is shown in figure 19. A predominance of female animals (as in the provincial level data) and a young age structure was observed, showing a pattern which suggests a healthy herd structure aimed at growth. This was the same as the pattern found in the crop-livestock integration study – cows and heifers increasingly outstripping oxen and steers (Wolmer et al., 2002). Such a pattern is often seen as sub-optimal in respect of beef production (requiring a greater number of steers), and possibly low on bulls for a ranch herd. However, it must be remembered that these are not primary beef herds, and these are largely kraaled and intensively managed herds where bulling is not a problem if required.

Figure 19: Age/sex structure of cattle herds – all sites



4. Livestock breeds

An assessment of cattle breeds showed a concentration of exotics in the resettlement areas, although a surprisingly high proportion in the communal areas too. The breed composition found in the new A1 resettlement areas reflects both the import of cattle from the communal lands, but also the purchase/confiscation of former ranch cattle which were predominantly beef breeds (but also some dairy). From the admittedly limited sample base, A2 farmers appear to be stocking their farms with a mix of breeds, including conventional beef ranch animals (Brahmans), but also Mashona crosses, and some dairy animals.

Table 7 shows the rankings of breeds comparing today with what existed at Independence based on discussions at the village meetings. These showed the significant increase in prevalence of exotic breeds (predominantly Brahmans, but also Herefords, Sussex and the odd Friesland).

Table 7: Breed ranking: comparing 2005 with 1980 for communal and resettlement (excl. A2)

Breed	Now	Before
Mashona	3	1
Mashona cross	1	2
Brahman	2	3
Sussex	4	
Africander	5	4
Hereford	7	
Sararine ³⁹	6	
Friesland	8	

The pattern of breed prevalence across sectors at a provincial level is shown in Table 8. This shows how Mashona type animals remain dominant outside the A2 commercial sector where more conventional beef breeds are more important, notably Brahmans. However, as noted by informants in this study, many if not most 'Mashona' are now crosses of various sorts, often showing distinctly exotic breed characteristics.

Table 8: Livestock breeds by agricultural sector in Masvingo Province 2004

Breed	Communal %	Resettlement %	Small Scale%	A2%
Bos Indicus				
Mashona	70	60	50	2
Tuli	5	7	10	3
Nkone	5	7	10	2
Brahman	6	8	8	40
Africander	6	8	8	40
Bos Taurus				
Sussex	1	3	4	5
Hereford	2	2	5	2
Aberdeen Angus	2	2	2	2
Charolais	1	1	1	2
Friesland/Holstein	1	1	1	1
Jersey	1	1	1	1
Total	100	100	100	100

Source: DVS, Masvingo

This pattern of extensive crossing with exotic breeds accelerated in the communal areas according to informants from the late 1980s when heifer exchanges with the commercial farms started up (see below). This was important in the recovery from both the 1981-84 and 1991-92 droughts in supplying new breeding stock into a depleted herd, but the consequence has been that indigenous genetic material (Mashona, Tuli etc.) has been diluted through crossing with exotics, including some animals which are ill-suited to the harsh feed and disease conditions of the communal areas, particularly in the drier parts. Many informants commented on how animals are less able to survive and adapt to drought conditions and are more susceptible to disease than they were before.

Information on smallstock and donkey breeds was sparse, but indicated that there had been no significant change in breed characteristics over time, or as a result of land reform.

³⁹ Correct name unknown.

5. Crop-livestock integration

Land preparation and draught power

Table 9 shows the pattern of land preparation across all households in each of the sites. On average 41% of households prepare land with their own oxen. This varies across sites between only 20% (Magudu) and 60% (Nyahombe). Differences between communal areas and new resettlements are not consistent. Some new resettlement areas seem to be well stocked (e.g. Lonely A, Edenvale Village 11), while others are not (e.g. Magudu).

Those who do not own their own livestock sufficient to form a span, either rent (the most common alternative), borrow or engage in work parties. Borrowing is more common in the Gutu cluster and work parties are more common in Ngundu and Chiredzi clusters. Rental markets for livestock are most common in Gutu and Ngundu and limited in Chiredzi. For those households who own cattle but do not have enough to form a plough span, they must combine their own animals with rented or borrowed ones.

Outside the A2 farms, only one household owned a tractor (in Claire A1) and a few households in that site rented or borrowed it. Otherwise land preparation was done by livestock or by hand. In the new resettlement areas, settlers had 1 acre ploughed free by DDF during the first years of settlement. By 2005 DDF charged between \$360000 and \$670000/ha for tractor ploughing, while farmer to farmer hiring was \$50000 / ha in Claire and Lonely A resettlements.

Hand hoeing was not recorded at all in Gutu and was limited in Ngundu. However, in the Chiredzi cluster, notably at the Chompani and Mongoyane sites, hoeing was carried out by 50% and 37% of households respectively.

Table 9: Land preparation practices by site (% age of all households)

		Animal draught				Tractor			Hoed/ fallow
		own	rented	work party	borrowed	own	rented	borrowed	
Chatsworth h cluster	Northdale A2	23	30.8				30.8		15.4
	Clare A1	35.7	38.1			2.4	14.3	7.1	2.4
	Lonely A1	50	43.3		6.6				
	Serima W5	32	52		16				
	Serima W6	36.3	39.3	13	11				
Ngundu Cluster	Nyahombe	60	16		24				
	Zivhu	46	44		6				4
	Gororo	30	48	2	7				11
	Magudu	20.3	44	17					17
	Ushauwhava V8	43.3	18.9	37.8					
Chikombedzi Cluster	Turf A1 V2	34.4	12.5	18.8					34.4
	Turf A1 2	46.4	28.6	14.3					10.7
	Edenvale V3	45.4	0	27.2					27.2
	Edenvale V11	50	0	16.6					33.3
	Edenvale V16	84	16	0					0
	Pfumari	22.8	11.4	20	0				44.3
	Batiti	53	11	16	0				21
	Mongayani	39	12	9	2				37
	Chompani	33	5	8	1				52
	Chanienga	38.2	8.8	23.5	11.8				14.7

Changes in Ngundu and Chikombedzi since the 1997-98 season can be observed by contrasting the 2004-05 data with the earlier period (Figures 20, 21 and 22). In 2004-05 93% of households in Ngundu used draught animal power to prepare their land, slightly higher than in 1997-98. 38% of households used their own animals and 46% hired, with a further 6% borrowing animals for ploughing. These figures again show a slight improvement in access and ownership of cattle for ploughing in the current period. Hoeing for instance was not evident in 2004-05 season, but nor was available tractor hire (through the District Development Fund) which had been used by a few households before.

In the communal area sites in the Chikombedzi cluster 46% used draught animal power in 1997-98, rising to 67% in the 2004-05 season accompanied by a fall in the numbers of households hand hoeing fields. In large part this is accounted for by the fact that the proportion able to plough with their own draught oxen grew from 15% to 37% as people have gradually managed to restock after the devastating drought of 1991-92. The combined figures for hiring or exchanging draft power through work parties or other means has remained at similar levels. As in Ngundu tractor hire was no longer available – fuel shortages meaning it was a much rarer option.

Figure 20: Type of cultivation 1997-1998 - source: Wolmer et al. (2002)

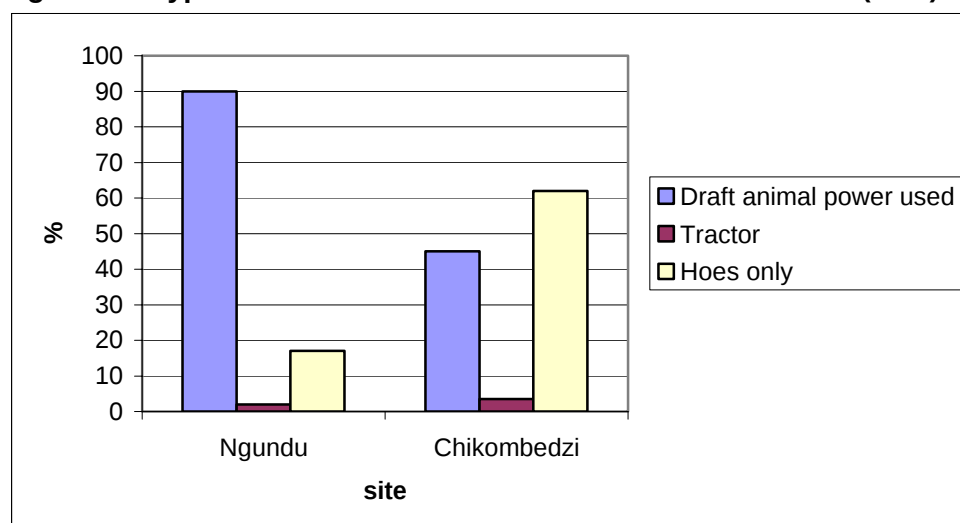


Figure 21: Source of draught power 1997-1998 - source: Wolmer et al. (2002)

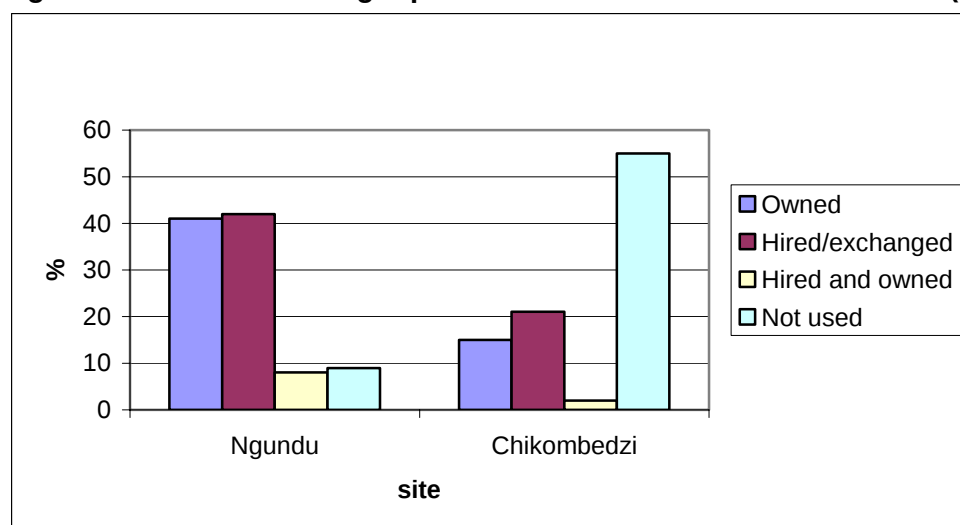
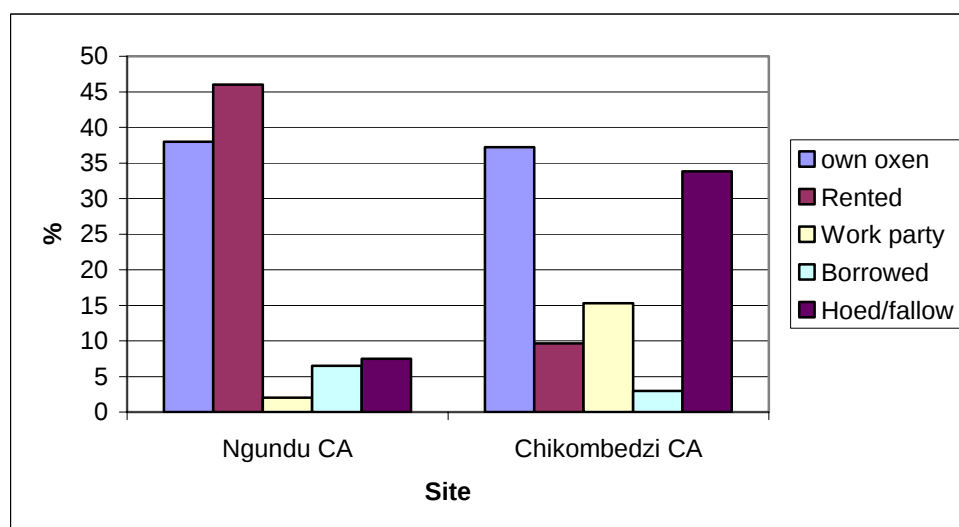


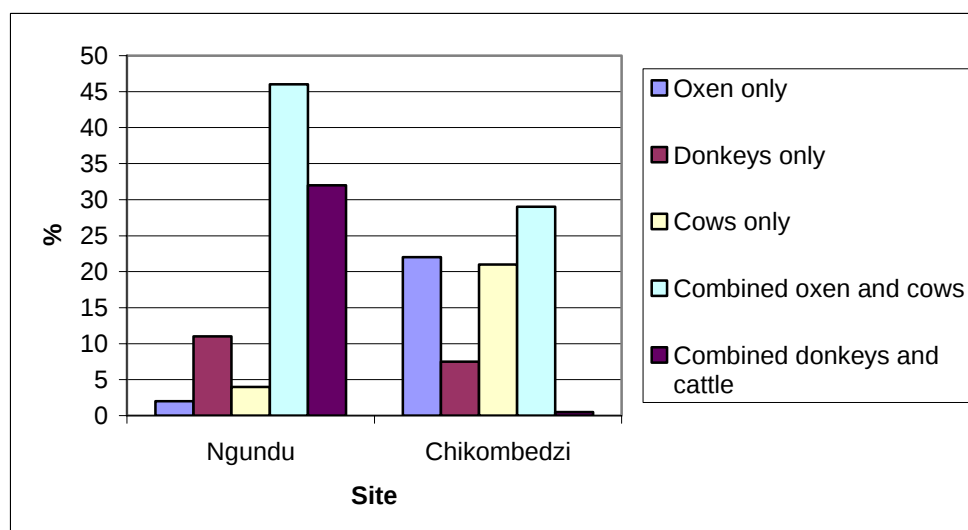
Figure 22: Source of draught power (communal area sites only) 2004-05



Source: field survey

The type of draught power used in the two sites was also broadly similar between the two periods, although exactly comparable data is unavailable. In Ngundu, for example, cattle remained the majority source of draft power, especially with oxen and cows in combination. In Ngundu the herd structure remains heavily skewed towards females with 74% being either cows or heifers. Only 22% and 5% are oxen and bulls, making the pattern seen in 1997-98 likely to be approximately the same as now. The only significant contrast is the decline in donkey ownership, with only 16% of households owning any donkeys (range 1-3). Mortalities due to the nearby road, as well as thefts, have discouraged people stocking them (see Box 1 below), and those livestock investments made of late have focused on cattle.

Figure 23: Type of draught animal power used 1997-98



Source: field survey

When discussing livestock production in any of the case study sites, access to draught power always comes out top as a priority. The costs of not having access – or having late access - to draught power are significant in terms of reduced crop production (Barrett 1991). With increasing numbers of people ill and infirm due to HIV/AIDS and related conditions, the options of preparation of land by hand is increasingly difficult. Due to difficulties in getting

hold of fuel and spare parts the few tractors that used to operate in the rural areas are very often not functioning today. Government tractor services via the DDF appear to be non-existent across the communal area sites, with the early support for A1 resettlement sites having declined.

No till options have been advocated by some and have been experimented with in Zimbabwe and Zambia (Vowles, 1989; Elwell, 1995; Haggblade and Tembo, 2003) with positive results. But in discussions farmers in the study areas remain sceptical. Cultivation is critical for poor, degraded sandy soils of the Gutu cluster and much of the Ngundu area, encouraging organic matter incorporation and soil biological activity. In the heavier soils (such as the basalts in Chikombedzi cluster and the heavy soils at Ngundu) breaking up the soil to allow root and water penetration is also seen as essential. While there is always a start-up establishment period for no/low till options, the costs of this (especially in terms of weed control) are seen to be high. Ox ploughing is also being encouraged in the new A2 farms. Mr C for example from Northdale A2 in Gutu used a tractor in 2003. But all his crops withered due to drought. The local extension worker advised against using tractors on his farm due to the fragile nature of the sandy soils. He has been hiring cattle draught for the 2004 and 2005 seasons. For the 2005-06 season, his target is to plough 10 ha of the 25 ha so far cleared.

For the time being at least, cattle in particular (but also donkeys) for draught power are thus critical to the farming system, and to livelihood survival. How people gain access to draught power is, as discussed, highly variable. Each season different households concoct different arrangements depending on the livestock and labour assets available. Over time this can be highly dynamic as livestock holdings fluctuate and as the available fit and health labour in the home changes. The two case studies outlined below show how circumstances have varied over time in two nearby and related homes in Ngundu cluster (Boxes 1 and 2) .

Box 1: Changing draught power access arrangements over time (1)

Mai Farai Zhivu (born 1952; 3 children; widowed)

Pre 1991/92: Before the drought Mai Farai had 10 cattle. There were enough to have 4 large animals used just for pulling ploughs and another 2 for pulling the cultivator. She would assist some relatives with ploughing for free and sometimes hire out her spans.

1993: 9 of her animals died in the drought leaving one 9-month-old heifer. Her family had to hoe the land.

1994: Her brother entrusted a donkey to her. This was spanned to the young cow and used to open up furrows for planting (rather than ploughing the whole field).

1995/96: Mai Farai teamed her animals with another young cow belonging to Mr. Matuka, a friend and neighbour (and borrowed Mai Collen and Newton Zivhu's. This was not a very powerful span and could only be used to plough the contours with easily workable soils. For the contours with heavier soils which required more serious traction she hired Mr. Chipudzi and his son to plough with their 4 donkey span at \$120/acre.

1997: Her cow and Mr. Matuka's had calved the previous year and so their respective cows and calves were again teamed to plough each others fields. Mai Farai's donkey (entrusted to her by her brother) was still available to replace the calves when they were tired.

1998: Her cow produced two further calves in June 1997 and they were introduced to ploughing this year. Mr Matuka now had 3 cattle in total. They continued to pair up to plough with each other. The donkey, however, was only for transportation. Mr Matuka and her also hired out their teamed span to plough other people's fields at \$300/acre.

1999/2000/2001: With 7-9 head of cattle now in the herd Mai Farai was able to plough with her own span and provide a span to help relatives with their ploughing. In 2000 a total 8 days were spent ploughing other people's fields with food provided in return.

2002: She lost 3 oxen to heartwater, but was still able to plough for herself and a relative (using one span and 6 cattle).

2003: Having bought 2 heifers there were now 9 in the herd. Her second span was used to assist 6 relatives in total.

2004: With 12 head of cattle now in the herd – largely descended from the sole cow to survive the 1991 drought and two spans (using 2 bulls, 1 ox and 5 cows) Mai Farai's fields were ploughed with her own cattle. The second span was also used to assist Mrs Chigwenya and 3 others. Tragically her son was killed when hit by a lorry on the road while driving a donkey cart. The donkeys were also killed.

Box 2: Changing draught power access arrangements over time (2)

Robson Zivhu (aged 64)

1970s – Robson had recently established his herd, and he helped out his brother Newton with ploughing who at that time did not have cattle of his own.

1980s – Both Robson and Newton had their own cattle, but they helped each other out on occasions. Newton established an arrangement with a nearby relative, Mai Collen to establish a joint span from their respective animals. Robson largely ploughed for himself.

1991-92 – All Robson's cattle died due to the drought. His brother, Newton started helping Robson out, reversing the pattern in the late 1970s when Robson helped Newton before he had cattle of his own. During the 1980s they would both help each other on occasions.

1992-94 - Newton continued to help Robson, with extra assistance from a neighbour, Gibson Muzimwe. Following the harvest in 1994, Robson purchased 2 cows and 2 donkeys with the proceeds of his cotton sales.

1995 - He developed a teaming arrangement with a local store owner, Mr Munyengeterwa. A combined span was formed between Robson's cows and donkeys and his friend's ox and cow.

1996 - For the first time since the 1991-92 drought, Robson had his own span. He started ploughing for some nearby relatives who did not have draught power after the death of the father.

1997 - Following sales of maize and cotton, Robson bought 5 animals – 3 cows, a steer and a heifer, boosting the size of his herd considerably.

1997-01 - During this period the herd continued to grow through births, and he was able to plough his own land, and that of his relatives, with his own span. By 2001 he had a herd size of 17, growing from 7 five years before, with each of his 6 cows producing calves during this time. 4 calves which all survived were, for example, born during 1999. In 2001 he had a span consisting of 1 cow, 2 heifers and one ox. From 2000, he had to invest more time and effort in ploughing for his relatives as the mother passed away, leaving orphaned children.

2002 – He lost a number of animals, with the herd declining from 17 to 9. Several died due to an unknown sickness, and one ox died after getting stuck in mud at the dam. In addition he lost two donkeys due to theft. As before he ploughed his own field and helped out the orphans, as well as one other friend in the village.

2003-05 – By late 2005 he had 10 cattle after having sold an ox at the market held at Museva dip. He still had his own span of one ox and 3 cows. He continues to help the orphaned relatives nearby and plough his own field. He does not attend *humwe* (work parties) as he does not drink beer.

What is clear from these two case studies is that patterns of accumulation and disposal of livestock, and so the ownership of livestock assets is far from predictable. A range of factors intervene. A number of causes of livestock mortality are noted, including drought, disease and road accidents. Sources of finance for purchases are also variable. In these dryland areas successful harvests are rare, and even then there may not be sufficient sale income for subsequent livestock purchase. Income from employment or local off-farm work is important and not so related to drought, but as the cases highlight other expenses are always impinging, whether school fees, caring for sick or orphaned relatives, funeral expenses and so on.

As the reproductive history of Mai Farai's drought-surviving cow shows, a herd can be rebuilt, albeit slowly, through natural growth. The heifer that survived the drought in 1991-92 gave birth in 1994 to a female calf and again in 1996 (male), 1997 (female) and 1999. The female calf born in 1994 went on to produce female calves in 1997, 1999 and 2000, and a further male calf in 2004. The 1997 female calf produced by the drought-surviving heifer gave birth first in 1999 (female) and again in 2003 and 2004 (males). Overall, then, an additional 9 animals were added to the herd from a single surviving calf over a period from 1993 to 2000, allowing the herd to be rebuilt.

But of course such a strategy relies on high reproductive success – good reconception rates, low abortion rates, low calf mortality and a preponderance of female offspring. This requires both good genetics (a resilient breed; in this case a Mashona cross – with Tuli or Africander), good management (available pasture and supplementary feeding, especially during pregnancy and when calves are young) and good luck. Mai Farai had this combination and with skilled management was able to ensure her herd grew from 1 in 1991 to 12 in 2005.

As the case of Robson and Newton Zivhu shows social relations for livestock sharing – joint spans between relatives and friends, helping out households in need or work parties (*humwe*) where spans are combined – are all important. In the early 1990s, the two brothers joined with a friend to manage a cooperative ploughing arrangement across three fields. With different soil types and different localised rainfall patterns they worked out a system for staggered ploughing that would optimise effective planting and so crop production across the field units (see Scoones et al., 1996; Wolmer et al., 2002).

Timeliness is almost as important as access. Late ploughing when you are way down the queue or when hiring proves impossible is almost as problematic as no ploughing, given the need in such dryland areas to be highly responsive and opportunistic in farming (see Scoones et al., 1996). As both cases highlight, social ties through kinship, friendship, church membership or other links are key to the production system, and central to draught access arrangements.

Manure access and fertility management

Access to manure is another important aspect of cattle ownership; again a theme highlighted in all discussions. The sandy soils of the Ngundu and Gutu clusters, particularly in the communal areas, require fertility inputs for successful crop production. With relatively small herd sizes and so limited manure, people have to make use of manure strategically, focusing manure inputs on particular fields. Most manure is applied to fields close to the home, or to garden areas, where more intensive labour and water management results in higher yields.

The complex dynamics of nutrient flows and their management across farming landscapes is explored for Chivi communal area by Chibudu et al (2001). This study of nutrient flows in the 1995-96 season showed how nutrient inputs – including manure – are focused on homefields and on maize. Despite this, nutrient balances (the difference between flows of nutrients (nitrogen and phosphorous) out and in to a field) are only just neutral. More positive nutrient balances are found for those households in richer wealth groups, with access to manure, transport and able to purchase at least limited fertiliser, while poorer farmers are unable to fertiliser their fields to such an extent and must adopt even more focused fertility management strategies, emphasising soil regeneration in particular patches and spot application of fertility inputs. For outfields and for non-maize fields, the nutrient balances, across wealth groups, were consistently negative in Chivi in the 1995-96 study. This reflects the low use of external fertility inputs used in communal area farming systems, due to a

combination of the very high – indeed prohibitive – costs of inorganic fertilizer and the limited availability of manure and other organic materials.

The pattern explored by Chibudu et al a decade ago is unlikely to have changed in the succeeding years. If anything the amount of fertility inputs applied will have declined, as inorganic fertiliser use has all but ceased due to the high costs. While cattle populations are marginally higher than ten years back, this will have had very little impact on overall manure production and application. As then, farmers still complain about the challenges of soil fertility management, and highlight these as one of the major constraints for crop farming. The patterns observed in Chivi however differ from those in other sites in this study. In the heavier soil areas of the Ngundu site (e.g. some parts of Gororo) and in the lowveld around Chikombedzi where heavy basalt soils exist, the constraints are less ones of soil nutrients, but effective soil moisture. This makes land preparation in particular key in these areas, something that is a major challenge given the heavy nature of the soils, particularly following rains. The pattern in the Gutu cluster is likely to be more similar to that described for the sandy soils of Chivi by Chibudu et al, but with nutrients being even more limiting (and rainfall relatively less so) in these extremely poor dystrophic soils. Here manure – and indeed any sort of fertility input – is at an extreme premium, and a highly valued resource.

In the new resettlement areas, however, soil fertility is less of a concern, as recent land clearance has meant that farmers can profit from the inherent – if limited – fertility of the soil. However, as is well documented for Zimbabwean soils, and particularly the fragile sands of the *miombo* zone – release of fertility from newly cleared land is only short-lived. Long term experiments on the heavy loam soils of Harare research station from 1919-1957 show how maize yields drop significantly five years after clearance to a lower level equilibrium which is only boosted, even on these relatively rich soils, by applications of fertiliser (see Chibudu et al., 2001: 125). Due to the recurrent drought since land occupation in 2000-01, settlers' major complaint in the new resettlements is lack of rainfall. But, especially in the Gutu cluster, the limits of soil fertility will inevitably strike in time, and farmers, having come from the farming areas surrounding which have poor, well-used soils with limited fertility, are well aware of this. For them accumulating cattle is a key strategy for both the immediate tasks of land clearance and cultivation, but also for the longer term investment in soil fertility.

6. Grazing and fodder management

Fodder is a major constraint for livestock production. This is particularly acute in the communal areas, and increasingly so in the old resettlement area due to illegal settlements. One of the major attractions of the new resettlements – even those with barely any agricultural potential such as in Mateke hills – is the availability of grazing lands. As noted above, cattle in particular were moved quickly to the new resettlement areas for grazing following land invasions. Many communal area dwellers still have their animals there, even if they have not been allocated or taken up plots. Sharing arrangements between communal area dwellers and new settlers (often relatives or friends from the communal areas) are common, with herds being split so that breeding and younger stock gain access to plentiful grazing while a core herd is retained for draft power and milk. Table 10 gives a summary of the grazing/fodder management strategies being employed across the sites derived from discussions at village meetings and other interviews.

Table 10: Grazing and fodder management

Location	
A2 Northvale	Free range grazing, plus supplements of Browse Plus and bull supplements each week. Dairy animals do not have sufficient green fodder in dry season for successful production. Dairy supplements supplied, and plans for irrigated fodder area of 30ha.
A1 Claire	Grazing adequate. Licks and vitamin supplements purchased by some.
A1 Lonely	Grazing adequate but some supplementation (molasses, salted crop residues), including licks supplied. Despite individualised arrangement, cattle graze together due to lack of fences.
CA Serima 5	Limited fodder available. Farmers collect grass and crop stover and mix with salt. In winter riverine patches sustain cattle.
CA Serima 6	Limited fodder. Used to graze animals as far as Chatsworth. Now not possible due to resettlement. Grass and stover collected, salt added. Riverine patches, vleis and hillside key resource grazing in dry season.
A1 Magudu	Grazing adequate with a large communal grazing area – but communal area cattle are also being put onto the former ranch making fodder relatively less available.
Nyahombe resettlement	Grazing areas used to be sufficient for settlers. However illegal settlers have established homes and fields in the grazing areas. 'Now the place is getting crowded like the communal areas'.
CA Zivhu	Grazing very limited. Movement also limited - 'the land is full'. Few have resources to purchase supplements. One farmer buys molasses, a few other buy licks. Otherwise crop residues are stored, and vleis, roadsides and hilly areas are key resources for dry season.
CA Gororo	Grazing limited. Movement along Chiredzi road to resettlement areas occurs, including loaning arrangements. Few can afford supplements/licks. Roadside grazing is main dry season key resource, but this results in major mortalities.
A1 Uswaushava	Grazing adequate with large grazing area. Few purchase supplements.
A2 Asveld	Grazing adequate.
A1 Turf	Grazing adequate – but snares a danger for cattle.
A1 Edenvale	Grazing adequate – but shared with cattle from Chompani/Chanyenga in the communal area. Cattle are sometimes tethered to trees to keep them from wandering into the many snares in the area.
CA Chompani CA Batiti	The previously limited grazing has become more available with opportunities to drive cattle into both the new resettlement areas and Gonarezhou National Park.

Source: Field survey

The communal areas in this part of the country have long had constrained grazing resources within their borders, and the pattern in Table 10 highlights this again. The settlement of large populations in the 'reserves' (later TTLs and CAs) following the 1930 Land Apportionment

Act meant that for decades the communal lands have been seen as 'overcrowded' and 'overstocked'. These recurrent narratives of exhausted land, overgrazed pasture and overpopulated landscapes have dominated the policy debate. Countless policy documents over the past 50 years have asserted that the communal areas have exceeded their carrying capacity, and that something must be done. Perhaps the most (in)famous initiative was the highly ambitious 1951 Native Land Husbandry Act. This was aimed at bringing a planned order to the reserves, including implementing long-proposed destocking regulations (cf. 1939 enquiry and 1942 Natural Resources Act). The reorganisation of land use into distinct villagised (linear) settlements (lines) and separate grazing and arable areas was aimed at improving production and environmental protection, as well as administrative order. The plans were hotly contested across the country, and were as a result unevenly implemented. The popular struggle against lines, soil conservation works and destocking was of course a key part of the liberation struggle discourse and a focus for mobilisation of a reluctant rural populace in the war.

The often commented upon irony, however, is that the self-same recommendations from the 1940s and 1950s have continued as central to the technocratic development approach post-Independence. In the more recent period, following land reform similar planning principles, rules and regulations are being implemented, sometimes with even more rigour and assertiveness (Chaumba et al., 2003)⁴⁰. Such approaches it seems are immune to the sequence of '*chimurengas*' seen over the past decades.

In the communal areas then seeking out flexible grazing resources, especially in the dry season and in droughts, has long been part and parcel of local herding strategies, so as to ensure that the maximum number of livestock could be sustained. When puzzling over the question of 'why there are so many animals?', research concluded that high cattle populations could be sustained (way over the recommended carrying capacity) over a period of 60 years or more through several routes (Scoones, 1993).

Perhaps the most significant grazing strategy employed is ensuring access to so-called 'key resources' (Scoones, 1995). These include low lying wetter areas including vleis, drainage lines and river banks, as well as 'edge' grazing along roadsides, field edges and contour/bund lines (also benefiting from water run-off) and browse (a vastly underestimated fodder resource in the dryland areas) (see Table 12). The spatial focus and seasonality of grazing patterns is seen to be highly conditioned by the availability of such resources in the mixed farm, settlement, grazing area landscape of the communal areas (Scoones, 1992b). For example, early shooting low tannin content leaves in the *miombo* woodland areas are critical before grasslands revive following rains. In the later dry season residual moisture in low lying areas such as vleis is key, with the micro-hydrology allowing grass to remain green far longer than surrounding areas. The combination of fodder quantity (dry matter) and quality (notably protein content) is also key, with certain browse sources and crop residues being critical in supplementing often poor quality grazing. Due to heavy use resulting from high animal densities, this is either absent or of limited nutritive value by the dry season when nutritional pressures are most extreme.

With larger amounts of overall fodder and lower livestock densities the requirements of focused key resource grazing are certainly less in the new resettlement areas. Exact livestock densities are unknown, but estimates suggest stocking rates are probably 2-3 times lower than in the nearby communal areas. Different land use formats exist across the resettlement areas, ranging from largish ranch plots (of 250 ha or more) in the A2 farms to

⁴⁰As the Reserve Bank of Zimbabwe put it in its 2005 Third Quarter Monetary Policy Statment 'It is now a war for productivity, law and order, discipline, mechanisation; a war for inputs, yields and markets...' Reserve Bank of Zimbabwe, 2005: 52).

individual A1 plots (as in Lonely A) of 15-40 ha each to villagised A1 models where each household has a homestead plot, 5-10 ha for arable land and shares a common grazing area (with 7-60 ha grazing per beneficiary), with stocking rates supposedly at 'recommended' carrying capacities (0.1-0.14 TLU/ha).

The distribution of grazing resources and access mechanisms thus differ in these models, at least in theory. For individualised plot arrangements without communal grazing the idea is that animals are grazed only in that area. Assuming that stocking rates remain low and that rainfall is reasonable, calculations suggest that on average sufficient fodder will be available to sustain the household/farm herd. In droughts the assumption is that animals will be sold off and restocked later. However, such assumptions may not be always upheld. Many resettlement farmers are eager to stock at rates higher than the recommended levels. For a commercial A2 farmer, even in Region III, a 250 ha farm would only allow 35 TLU (or around 54 animals). Informants commented that this is insufficient for a commercial concern and higher animal numbers or land sizes are required.

Farmers discussed with during this study suggested that the recommended rates were too low, and that, with alternative grazing management approaches, higher stocking rates would be possible. In particular informants pointed to making use of the key grazing and browse resource strategies long used in the communal areas and familiar to all new settlers, including A2 farmers. A2 farmers emphasised the possibilities of supplementation too, and the combination of grazing with crop residue use, something not a standard part of the 'ranch' management package. For those lucky enough to have a vleis or riverine patch within their property or traversing their plot, such an approach, particularly if the low lying areas were cultivated with fodder or high residue producing crops, was seen as feasible, even with the relatively small land areas (at least compared to the ranch units used before).

However, for those without such key resources immediately available, the limits to herd growth were apparent. For these plot holders, negotiated access to others' grazing was seen as key. In practice of course the lack of fencing of boundaries to date and the relatively low stocking rates pertaining, as new resettlement farmers build up their herds, has meant that such considerations are ones only for the future. But, given the prospects of increasing take up of land in the resettlement areas and with this increasing numbers of animals, these issues of grazing and fodder management will soon be encountered.

The assumptions of imposing a paddock/ranch model on the new resettlement areas, even in the extreme dry areas such as in the Chikombedzi cluster, are wishful thinking, supplanting an inappropriate technical model on an evolving and dynamic system. Clearly there is much to be learned from how communal area systems have coped (despite the continued bad press) and use this as a way of thinking about future grazing and fodder management strategies in the new resettlement areas.

In the next decade or so there will be some major changes in the new resettlements with knock-on effects for surrounding areas. These must be thought about and planned for. For example, herd growth of settlers' animals, including the increasing stocking of smallstock, will inevitably occur as new settlers become more established. Following a few good seasons of successful cropping, one of the first expenditures will inevitably be cattle. Combined with relatively good calving rates in the resettlement areas because of plentiful feed resources, population growth rates look set to increase. This is good news for the settlers, but potential bad news for others who are currently making use of the grazing areas. Today, as discussed, nearby communal area livestock owners are making good use of the resettlement areas, sometimes with permission but often without. Currently there is surplus fodder and plenty for all comers. The incentives to invest in institutional or physical mechanisms to keep others' animals out are relatively small. But, as fodder resources become more constrained, it is perhaps inevitable that fences will be put up and exclusion

mechanisms enforced. With such free grazing no longer feasible, communal area cattle may be pushed back to their limited grazing lands, increasing the risk and costs of cattle production there.

Today, however, cooperation between new settlers and communal area residents characterises most relations, but in the future more conflict and competition can be foreseen, as neighbours become branded as 'poachers' and the need for reciprocal sharing arrangements decline. Of course there are limits to enforcement and clear benefits of cordial relations as some previous ranch owners recognised, so it is not sure what will happen in the future. However, the dilemmas faced by the residents of the old resettlement at Nyahombe are instructive. Here invasions of the grazing area by new illegal settlers have limited the original settlers' grazing options (Table 10), with the emergence of more constrained communal area style grazing strategies. The inability of the Nyahombe residents to exclude illegal settlers has been the consequence of the breakdown or at least dissipation of authority at the local level in recent years. No one quite knows who is in charge, and who has the legitimacy and clout to implement rules and regulations. Is it the chiefs/headmen, is it the war veterans, is it local government and the DA, is it Ministry of Lands and the president's office or is it the local AREX officer? This institutional confusion is most apparent in the new resettlement areas, but is also evident in the communal areas too. The consequence is that the institutional and governance arrangements for grazing management (and land use more generally) is in a state of flux, making new arrangements for managing resources at a local level tentative, fragile and uncertain, and always under current circumstances requiring intensive political negotiation between different groupings.

An earlier study explored farmers' perceptions in the Ngundu and Chikombedzi clusters of different fodder management strategies (Table 11), and ranked them in priority order for different drought periods (Table 12).

Table 11: Pros and cons of different fodder management strategies

	Feed management	Pros	Cons
Lopping tree branches	Stock owners either lopped tree branches and fed livestock around homesteads or drove livestock to trees that they lopped. Mulberry and mango trees were also lopped. When drought deepened exotic hedges were not spared. In Chikombedzi, <i>mopane</i> , <i>mabvumuria</i> and <i>pfungwanni</i> were particularly important.	Source of fresh feed for livestock; intake good – palatable feed; lopping was crucial to livestock survival; grass was depleted, trees were plentiful.	Labour intensive; climbing trees and cutting not possible for women, also risky for men; presence of tannins affected digestibility; deforestation; long distances travelled to lop trees for livestock; transport (carts) required.
Feeding tree pods/fruits	<i>Masekesa</i> dry pods were collected, chopped or pounded in mortars and fed mornings and evenings; <i>mupangara</i> dry pods were collected, immersed in salted water dried fed 'as is' or pounded in mortars and fed; <i>acacia</i> pods were collected and fed straight; <i>mumveva</i> fruits (difficult to chew were fed to donkeys after chopping.	Palatable nutritious feed; animals drank a lot of water after feeding and condition improved; pods were cheaply; livestock helped themselves by eating pods which fell under trees.	Collection of pods was labour intensive; climbing trees to harvest pods and fruits was risky to the youths involved; after some time the pods and fruits were depleted.

	Feed management	Pros	Cons
<i>Rusungwe</i> (<i>Ruzoka</i>)	Cattle were driven to mountains where the <i>Euphorbia</i> climber grew. The climber was cut into pieces and animals fed.	Palatable, nutritious; stockmen believe <i>rusungwe</i> was dosing remedy (livestock dung became soft); evergreen climber, fresh feed at all times; plentiful in hills and mountains of Chivi.	Situated on steep hill sides cutting posed risk to people (falling); cutting labour intensive; juice poisonous to eyes of humans.
<i>Mafuri</i> (<i>Coleochlea setifera</i>)	Long, thin, pliable sedges also used for plaiting grew on rock crevices in mountains were collected soaked in salted water and fed to cattle.	Palatable; survival feed; shoots grow even with little rainfall providing 'green bites'; plentiful in hills and mountains.	Difficult for cattle to chew (could cause animals to cough); labour intensive; cattle which sometimes grazed the sedge fell off slopes, got injured or died.
<i>Madhorofiya</i> (cactus)	Prickly pears found in valleys or hills were eaten <i>in situ</i> by cattle or were cut and singed over flames to remove thorns. The plant was chopped and fed.	Plenty of water; acceptability and intake improved by burning and removing thorns; bulky feed (thick and fleshy).	When located in steep places, not easy to cut; spines or thorns harm people when harvesting; acceptability poor if spines are not removed; too heavy for cut and carry.
<i>Gubvuwa</i>	A climber found in Chivi south was chopped and fed to cattle and goats.	Palatable.	Difficult for livestock to chew; low availability.
<i>Muzangari</i> (<i>Eragrostis</i> spp.)	A tough grass found on hills and mountains (also used for thatching houses in Takavarasha area) was cut and soaked in salted water and fed to cattle.	Palatable when green or dry.	Grows on places with difficult access; long distances from stockmen residing far from hills and mountains.
<i>Phombwe</i>	An underground tuber found in the Chikombedzi area.	A survival feed; ha plenty of water; three tubers could feed up to 6 cattle; dosing remedy for worm; used to treat lumpy skin disease; fed fresh without drying first.	Intensive digging labour up to 50 cm depth; animals take time to accustom to the feed; tubers were finished before the drought ended by March 1992.
<i>Tsoketa</i>	Local plant found in Chikombedzi area.	Nutritious.	Milk poisonous to eyes and skin of livestock; cutting labour intensive; fed only when dry, limited availability.
Sugar cane tops	A few farmers in Chivi South brought some from Triangle and fed cattle. More widespread in Chikombedzi	Palatable.	High transport costs, although an option for truck drivers
Hay bales	A few Chivi farmers bought some hay bales in Masvingo Town.	Palatable, good feed.	Expensive to buy and transport.

	Feed management	Pros	Cons
Maize husks	The Mawarire family bought maize husks from vendors at Chivi Growth point.	Palatable.	Limited supply.
Stock feeds	Rumevite blocks; pen feeding meal; whole meal.	Palatable, nutritious feed; balanced diet.; animals drink more water; relatively easy to transport.	Expensive, few could afford; lack of knowledge.
Crop residues	From a range of cereal and legume crops.	Good bulky feed for livestock.	Buying \$100 per 0.1ha plot in irrigation.
Cut and carried grass	Collected from hills, contour ridges, field edge and river banks.	Good feed; dual purpose (thatching and feeding).	Labour intensive.
Vet feeding scheme		Animals survived; free feed	Started too little too late; located far away

Source: from Drought Coping Study (Scoones et al., 1998).

Table 12: Relative importance of different fodder management strategies

		1982-84	1991-92	1997-98
Ngundu, Chivi	Lopping tree branches	****	*****	-
	Feeding tree pods/fruits	***	**	-
	Feeding <i>rusungwe/ruzoka</i>	**	*	-
	Feeding <i>gubvuwa</i>	*	*	-
Chikombedzi	Phombwe	-	****	-
	Tsoketa	***	*	-
	Crop residue	*	-	*****
	Sugar cane tops	-	*	*
	<i>Mopane</i> leaves	*****	****	****

Source: Compilation of matrix scoring exercises (10 seeds/drought period/area), from drought coping study (Scoones et al., 1998).

7. Drought response and coping

As already mentioned, local fodder resources within the boundaries of a village area, scheme, farm or plot are insufficient in some years when the crash in primary production due to low rainfall is such that there is simply insufficient biomass to keep animals alive. In such cases, animals either die, or are sold or are moved out of the areas. Studies of movement strategies from Chivi/Mazvihwa communal areas in 3 successive droughts (1981-94, 1986-87 and 1991-92) showed survival percentages of 40% for cattle moved out of the area before November, 23% if moved before the dry season and 3% with no movement (Scoones et al., 1996: 213; 1992b).

Table 13 summarises the livestock-related drought response and coping strategies that people followed across the sites during 1991-92 and in 2005, contrasting the two periods.

Table 13: Drought responses – 1991-92 and 2005 compared

Site	1991-1992	2005
A2 Northdale	n/a	No shortage of feed quantity - quality issues addressed through purchase of supplements - <i>masese</i> , browse plus; stover feeding, with salt; bull supplements to bulls; dairy supplements to dairy cattle. No irrigation for green fodder for dairy as yet. Licks provided; hay prepared in summer.
A1 Claire	n/a	Plenty of grazing - no fence, so mixed grazing, including those from outside; big problem of burning this season. Animals surviving from small patches and browse. Apply salt to maize stover for supplementary feeding.
A1 Lonely	n/a	Plenty of grazing, but communal herds also use. Fences destroyed, and problems of burning too. Salt blocks used with maize stover/cobs. More supplements used than before as more feed available in area.
CA Serima 5	As now - movement to ranches (both illegal and lease grazing); also lopping of trees; blocks/licks; riverine grazing (herding along waterways/contours etc.).	Hay making/stover collection and mixing with salt - feeding from September on. More land for grazing after land reform. Vleis/riverine areas are key.
CA Serima 6	Used to graze in farms up to Chatsworth; lopping branches; feeding with <i>Acacia</i> pods; providing blocks/licks; herding along waterways.	Limited grazing now. Access to farms restricted because of new settlement. Some have good relations - supply draft power etc, and then allowed to graze; feed animals with hay/stover with salt (blocks purchased from Chatsworth farm supplies).
A1 Magudu	n/a	Grazing getting finished - CA neighbours come and graze (Nyikavalulu). Close interactions - share school; joint humwes etc. No grazing on nearby ARDA farm. CA livestock owners driven to Samba ranch (70km away).
Nyahombe resettlement	Local grazing within area.	Local grazing - but settlement in grazing areas from 2004 putting pressure. Fences removed, so have to invest more in herding.
CA Zivhu	Crop residues, supplements; Cattle moved to resettlement areas south of Tokwe river and Mwenezi commercial ranches.	Grazing in area - but also along highway. No fences - many accidents. Feed maize stover, mixed with salt stone ground in.
CA Gororo	Tree pods, grass, crop residues. Cattle moved to resettlement areas and Mwenezi ranches.	Some have gone to farms - including Mwenezi. Others keep at home but dangers of highway grazing. Giving maize stover to cattle.
A1 Uswaushava	n/a	Extensive grazing, no supplements.
A2 Fair Range	n/a	Extensive grazing, crop residue, supplements.
A2 Asveld	n/a	Extensive grazing, but limited water.
A1 Turf	n/a	Extensive grazing, but limited water.

Site	1991-1992	2005
A1 Edenvale	n/a	Extensive grazing, but limited water. <i>Phombwe</i> also gathered.
CA Chompani	Cattle driven far - to Sengwe; to farms illegally. Many lost - through death and theft. <i>Kufuyisa</i> system used in Sengwe. <i>Phombwe</i> used little - no knowledge at that time.	Limited grazing in area. Cattle driven into new resettlement areas including Edenvale ranch. <i>Phombwe</i> gathered.
CA Batiti	Feedlot Mpagati BC; movements/kufuyisa to Sengwe etc; movement to farms (illegal and rental grazing). More restrictions of access to farms/parks.	Limited grazing, but good access to grazing – for the timebeing – in neighbouring resettlement areas in former ranches. Also access to rental grazing in Gonakudzingwa small scale farms and poach grazing in Gonarezhou national park where cattle encroachments are less vigorously policed than in former years. <i>Phombwe</i> gathered.

Source: Field discussions and observations, 2005

While there are some important similarities, there also are some striking differences worth noting. These in particular have implications for policy interventions for drought management in the province, and particularly for the institutional and policy framework for managing relations between different land use categories (communal, new resettlement, A1 and commercial, A2).

Across the two periods movement has been important, either to under-utilised ranches/resettlement areas or as part of more formal lease grazing arrangements. Supplementary feeding from local sources has been significant too, notably the extensive use of browse and in the Chikombedzi area the tuber *phombwe* [*chitupatupa*; *zombwe*]. In both periods, the use of commercial supplements was limited to just a few people, with access to cash for their purchase.

There are also some striking differences between the two periods. In 1991-92 the government set up a number of feedlots. By 2005 these were non-existent, with the fencing removed and no government support provided. Most assessments of the earlier government feedlot scheme were negative: they were expensive to establish and run, and by concentrating animals in one place, mortalities were high and acted as disease flashpoints. While *phombwe* was used occasionally in 1991-92 in the Chikombedzi cluster, its use took off in a major way in 2004-05 (see box 3). Many commented that harvesting of *phombwe* and feed animals *in situ* was a better strategy than moving animals, with all the labour costs and inherent risks. With new areas now opened up by resettlement opportunities for *phombwe* collection had expanded, and there was even a nascent market in *phombwe* tubers developing in the Chikombedzi area. As one informant commented from Village 16 on the Edenvale A1 resettlement area: 'My cattle used to resemble lizards, but I started feeding them *phombwe* – now they are real cattle'.

Box 3: Phombwe – a key drought coping resource in Chikombedzi

The as yet unidentified tuber *phombwe* has become critical in drought survival strategies, especially in the last few years. The following 3 case studies highlight its importance.

NC: In the 1991-92 drought, 24 of my cattle died leaving me with one ox. Phombwe were fed to the cattle. But without supplements these are useless. The one ox survived through being fed thatching grass off one of the small huts. This was later exchanged with 2 heifers from a commercial farm and they subsequently multiplied. Today *phombwe* is being used with supplements, and this seems to be keeping animals alive.

MC: Earlier I was driving cattle all the way to Makiyasi for grazing, and then I only came home at weekends. However when I compared those cattle with the ones remaining, being fed *phombwe*, I found that the latter were in better condition and decided it was no longer worth the effort driving them so far.

SM: I feed my cattle twice a day with phombwe. This adds up to a scotch cart per day. This is very labour intensive, as each *phombwe* tuber must be dug individually from the soil. They are sometimes deep and difficult to get hold of.

Source: field surveys

Patterns of movement had changed too by 2005, as a direct result of the land reform. Earlier studies in the Ngundu and Chikombedzi clusters highlighted livestock owners' perceptions of movement options in the 1982-84, 1991-92, 1997-98 and 2004-05 droughts. Table 14 highlights how livestock keepers ranked these options in the three periods, while Table 15 highlights the pros and cons of the different options.

Table 144: Relative importance of different movement options by year

		1982-84	1991-92	1997-98	2004-05
Ngundu, Chivi	Vacant ranches	*****	*****	-	**
	Resettlement areas	**	*	-	*****
	Tugwi/Runde river valleys	***	**	-	-
Chikombedzi	Gezani, Sengwe CA	*****	*****	*****	-
	Muraba ranch	*	***	***	**
	Gonarezhou National Park	***	*	*	***
	Resettlement areas	-	-	-	*****

Source: Drought coping study, Scoones, et al., 1998 (Compilation of matrix ranking exercises)

Table 15: Pros and cons of different movement options in 1998

Movement options	Pros	Cons
Vacant commercial ranges (1982-84)	No movement restrictions – free access; water was available in the Runde or the Tugwi rivers (ranch water sources had stopped working); no restrictions on cutting trees for building temporary pens and shacks for livestock and herders.	No dipping, livestock affected by ticks; budgeting twice (for herders and household); hiring herders (\$10 per month + groceries or \$100 per 3 months + 2 bags of maize); irresponsible husbands sold cattle privately and spent money on prostitutes; stock thefts occurred.
Resettlement areas	Better grazing availability; exploitation of kin and friendship ties by loaning out (<i>kuronzera</i>) live-stock to resettled farmers; dips resuscitated and accessible; interdependence between resettlement and communal farmers.	Access had to be negotiated with resettlement committee; sometimes cattle strayed into nearby commercial farms where fines were \$15 to \$25 per beast; resistance by resettled community leading to violent confrontations; when grass was depleted livestock died in large numbers, e.g. Nyahombe in Chivi South.
Tugwi/Runde river valleys/hills and mountains	Availability of 'green bites'; water available; temporary dwelling shelters usually sited in valleys near water; could combine herding and gold panning; no access restrictions.	River valleys heavily grazed; long distances between rivers and permanent homes resulted in reduction of watering frequencies; travelling stressed animals in poor condition; weak animals got stuck in mud in rivers; cattle fell off mountains.
Gezani (Sengwe CA)	Good grazing in Gezani; access facilitated by kin and friendship networks between people and chiefs; mutual inter-dependence (Gezani rely on Ward 11 for draft animals, Ward 11 rely on Gezani for livestock grazing); Masukwe VIDCO officially permit borrowing of 6 cattle per household for draft purposes from Ward 11; grazing access negotiation also involved the local MP Mr Baloyi.	Current dissatisfaction at kraalhead level over cattle influx and grazing boundaries; Gezani communities erecting paddocks with World Vision funding will restrict cattle movement; Gezani cattle borrowers exceed VIDCO limits; poach grazing, breaking fences; hyenas and lions kill livestock; inadequate drinking water in Gezani; cattle may go without for 2 – 3 days
Gonakudzingwa SSCAs	Friendship ties facilitate access; mutual arrangements, grazing for labour exchanges	Poach grazing; some SSCA farmers demand payment with heifers
National Parks, Edenvale ranch, JB ranch, Muraba ranch	Good neighbour relations facilitate access	Perception by Ward 11 farmers that grazing boundaries are artificial and imposed because long back culture did not have boundaries —leads to rampant poach grazing; fines, livestock shot by commercial farmers

Source: Drought coping study (Scoones et al., 1998).

At one level by 2005 movement had become easier. Relatives and friends were now on the resettlement farms, and were keen to have animals there for ploughing. The possibilities for movement for those living nearby resettlement areas had expanded significantly given the recent history of relatively uncontrolled cattle movements and the removal of fencing. For those with plots in the new resettlements, many commented that, despite the drought, grazing was plentiful. However, there were restrictions too. While enforcement was limited, some A1 settlers had tried to prevent cattle roaming into their areas. In the past few years, some tensions had emerged: for instance between communal area residents and new A1 settlers on Edenvale, when communal area livestock owners moved animals onto the A1 site and lopped browse trees for them; or when settlers on Clare and Lonely in Chatsworth burned crop residues to deny fodder to Serima communal area cattle.

Such conflicts and tensions were observed as a contrast with the past when moving animals on to many ranches was relatively straightforward. When vast areas were occupied by a single rancher and a few labourers, there were few people there, and in many cases enforcement was lax. Although illegal, and there was always a risk of arrest and impoundment, there was less need for complex access negotiations with new settlers and their committees. Instead it was a simple matter of cutting the fence and letting animals in.

Such poach grazing strategies of course still persist, most notably around the national park area of Gonarezhou. Although attempts were made to broker a grazing access deal for nearby cattle owners, this fell apart. Villagers instead resorted to fence cutting and poach grazing on the park boundaries, taking the risk of wild animal attack and arrest by game guards.

In 1991-92, particularly in the Chikombedzi cluster, longer distance and longer term movement through *kufuyisa/kuronzera* loaning arrangements were particularly evident. Thus Chikombedzi residents sent animals to Sengwe for grazing, with arrangements building on long-term loaning linkages built up over years. This allowed the strategic movement of quite large numbers of animals to make up for localised fodder deficits. This sort of loan arrangement was less apparent in 2005 and – following an agreement officiated by traditional leaders from Matibi II and Sengwe communal areas in 2004 – the terms of the arrangement had changed. It had been customary for the party looking after the cattle to receive one animal as payment. However, argued cattle loaners from Matibi II, the recipient was already benefiting in the form of draught power and milk – even cash if the animals are hired to plough others' fields. The compromise agreed was that in situations where someone without cattle approaches a cattle owner to enter into a *kufuyisa* agreement no gift of cattle should be expected. When it is the cattle owner approaching people to loan cattle to the recipient should expect a reward. The seeming decline in livestock loaning arrangements and changes in the terms of exchange can perhaps be accounted for by the relative abundance of 'free' grazing in the aftermath of land reform making these arrangements less necessary for fodder-scarce livestock owners. Also the marked rise in cattle rustling (see below) has made people more nervous of having livestock out of their direct control and lead to some *kufuyisa* stock being reclaimed by their owners.

Due to the challenges of movement, for some a strategy of supplementary feeding at home had become more critical, responding to a general impression that the 'land was now occupied and full'. Such investments in intensification - lopping trees, collecting tubers, feeding salted crop residues – have long been part of drought coping strategies (see table 13), but can be seen as increasingly significant for many, with implications for strategies for external support and intervention.

For many the recent period was, however, not an issue of lack of feed - this was available on the resettlements or abandoned farms - but water. This was particularly the case on the new resettlement sites, both A1 and A2. The breakdown of boreholes and pumping facilities (or

their removal or destruction by former owners) had meant that many watering points and small dams were no longer functional. The lack of rainfall over several years had also meant that dam recharge and river/stream levels were consistently low across the study areas, with consequent lack of water for livestock. This lack of water had meant an increase in movement, sometimes over long distances, to reliable water supplies. Investments in digging wells and rehabilitating boreholes are on-going, but are hampered by lack of external support and funds.

With the ownership and use of land so dramatically changed in 2005, there are many new challenges for the management of fodder resources, and particularly drought coping. With overall more land available, and owned by the state, even if on lease arrangements, there is more scope for developing a coherent drought planning and contingency strategy for livestock. As the discussion above has shown, the wider fodder – and indeed water resource - landscape – across A2, A1, old resettlement and communal areas – must be seen as a whole. With current livestock populations, there is clearly plenty enough grazing available in total. The challenge is to think about access mechanisms and appropriate institutional arrangements for negotiating these. However, the situation of relative plenty may not persist. With future land clearance and livestock population growth, constraints and competition will inevitably arise.

A more strategic view of how grazing and water resources are developed and managed is clearly needed. This must take into account the emerging realities on the ground. In the past, rangelands of Masvingo were divided into large tracts with low stocking rates/low utilisation for commercial beef and game ranching, alongside intensively used communal (and resettlement) areas with high stocking rates. The ranching areas were able to adopt a conservative stocking strategy, and only in the most extreme droughts was movement or drought induced offtake required. The communal/resettlement areas had to be more opportunistic, responding to the vagaries of the weather and the levels of fodder available through the array of coping strategies described. These were in part effective, but were reliant on ingenuity, skill and sometimes illegal actions on the part of livestock keepers. Such strategies were rarely supported by government, and when external support came – in the form of feedlots for example – this was often late and inappropriately designed.

In the past the communal/resettlement system of range use and drought response was written off as inappropriate, environmentally damaging and in need of reform. The last decades have seen a catalogue of proposals to change this system – through breeding programmes, grazing schemes, fodder improvement, irrigated pastures and so on. All have failed. This is of course no surprise. Such interventions were almost always premised on the assumption that the communal/resettlement livestock system was to be developed along the lines of the commercial beef production system, where improved breeds, rotational grazing and improved fodder make sense ecologically and economically. The reason such interventions have so consistently failed – despite many attempts, lots of good intentions and plenty of government and donor money – is the lack of realisation that the communal/resettlement area system is different. A high stocking rate, opportunistic system which aims at multiple use herds and maximising numbers across households is very different indeed, requiring quite different interventions.

With the wider rangeland landscape having been transformed through land reform such a system is now by far the dominant one. Across the study areas, a few of the A2 farms are aiming for a more conventional commercial production model, but even these farmers are stocking a diverse herd, with breeding and herd growth the major initial objective, and offtake of any significant level only a longer term plan (see above). For others, the level of offtake remains limited, and the focus is on herd growth for the diversity of functions already discussed. This of course has major implications for how range management is seen,

requiring the abandonment of the commercial ranch model in favour of one more suited to emerging conditions. A number of challenges are evident:

- The need to focus on low cost approaches to rehabilitating and improving drought reserve grazing – key resources of waterways, vleis etc. where relatively higher moisture levels allows greener grass to persist in drought periods.
- Focus on developing fodder banks of indigenous and introduced species for supplementary feeding in dry seasons and droughts. This would include developing guidelines for browse lopping and treatment, as well as experimentation with cultivation/management of such key resources as *phombwe*.
- Improving water resources, particularly in areas with underutilised fodder, notably in the former ranches and new resettlement areas. A major programme of small dam/tank construction and borehole/well sinking or repair will be needed, in both the communal and new resettlement areas.
- Perhaps as important as the physical infrastructure investments listed above, there needs to be a focus on developing the institutional mechanisms for negotiating access to grazing and water resources across land uses – between communal, old resettlement, A1 and A2. The dangers of the fences going back up following land reform are already apparent, and this could have major detrimental consequences in the future, unless advance-negotiated access agreements are settled, together with processes for conflict negotiation.
- Such elements need to be put together in an effective, but low cost and efficient, drought contingency planning and response capacity, which operates across land uses and districts. At the moment such capacity is non-existent, and responses are piece-meal and ineffective. With government capacity currently at such a low ebb, and much uncertainty remaining of land use occupancy and control, this will be a longer term objective, but one that will be critical for the future.

Earlier studies (e.g. Scoones et al., 2001; 1998) have highlighted the central elements for an effective drought contingency approach for Masvingo province, based on information from the same study areas. One of the main conclusions of that study was the need for:

Increasing the pace of land reform, especially the acquiring of land nearby existing communal areas for expanding grazing land. This remains an urgent priority, and is fully justified given the important contribution of communal area cattle to the national economy and social welfare (Scoones et al., 1998: 48).

With significant land reform having occurred since, the urgency and relevance of the remainder of the recommendations focused on increasing the resilience of the livestock-livelihoods system in the dryland areas of Zimbabwe is only increased (see Appendix for the 1998 report's conclusions).

8. Wildlife and livestock

The dramatic changes to the landscape and economy of Masvingo Province since 2000 have also been bound up with major changes in the wildlife sector (see above). Whilst a detailed investigation of this sector was beyond the scope of this study, wildlife management continues to have important economic, institutional and veterinary implications for the broader livestock economy.

What has happened in practice to wildlife management in the case study clusters? In all sites – particularly in the relative free-for-all of the '*jambanja*' period accompanying the initial farm occupations – poaching of game with snares or hunting dogs and fishing with nets became much more prevalent. Especially in the Chikombedzi cluster this persists to this day and illicit commercial exports of game biltong to South Africa continue (see below).

In Chatsworth wildlife management was never an option. There were no game ranches or CAMPFIRE hunting concessions. In the Ngundu cluster wildlife is still reasonably prolific in Fair Range A2 resettlement area and in Uswaushava A1 resettlement area. Fair Range's proximity to the conservancies means that wild animals stray into the new A2 settlements. This has resulted in numerous deaths of livestock, particularly goats.

It is in the Chikombedzi cluster that wildlife is most significant – given its proximity to Gonarezhou National Park (and now Great Limpopo Park) and the fact that two of the study sites (Turf and Asphalt ranches in the Mateke Hills were former game ranches with hunting concessions; and two of the communal area sites (Mongayane and Batiti) are in CAMPFIRE Wards.

Advocates of the biosphere reserve for Masvingo's lowveld (Part I; section 3) have also adapted their arguments to the new land tenure circumstances in the area. Consultants have started to talk of 'community-based wildlife conservancies' as a development model for Mwenezi resettlement areas which would tie in with the regional transfrontier conservation area concept. The Mateke Hills and a series of properties forming the putative Mwenezi River Corridor have been earmarked for such a model. There is also talk of establishing 'Mwenezi Consolidated Conservancies' (CESVI, 2005) which would encompass most of Mwenezi District.

In practice, however, 'wildlife management' in this area has largely been in the form of hunting and attempts to safeguard crops and livestock from wildlife depredations. In the Mateke Hills A1 and A2 sites, for example, wildlife has, in the main, been a source of revenue for settlers and outsiders who have hunted game for the biltong trade. Women come to Turf ranch from Beitbridge to buy sacks of biltong largely for the South African market (see part III, section 10). In Gonarezhou National Park there have been reports of poaching elephants for ivory (for sale in South Africa), as well as hunting for biltong for local sale. Fishing with nets also occurs in the pools on the Mwenezi River and has pushed further and further into the park.

Hyenas are a significant danger to livestock (including large cattle) in the Mateke Hills area as are the numerous snares set by poachers. Elephant predation of crops is also occasionally a problem in the communal area sites bordering the national park.

As elsewhere in Zimbabwe, commercial hunting persists alongside the unofficial poaching. A certain amount of confusion stems from the fact that former owners of game ranches still hold the hunting licences and control hunting camps but now lack the land on which to hunt. The former owner of Asveld ranch, for example, pumps water for settlers' cattle, provides dipping drugs and fuel in return for negotiating hunting access to their new land. Much as accommodations and negotiations between former ranchers and settlers are the order of the day for securing livestock grazing deals are being done by former owners – or external professional hunters – to bring safari clients into resettlement areas. Hunters, it appears, are less dissuaded (or even actively encouraged) by the poor press that puts tourists off visits to Zimbabwe. Even Senuko – a ranch in the Save Valley Conservancy marketed to tourists as hunting-free – has reverted to hunting.

There are starting to be attempts to put safari hunting arrangements on newly resettled land in the Mateke Hills and elsewhere onto a more official footing. The settlers in Asveld Ranch, for example, angered by what they see as an unfair division of hunting revenue by the former owner are now applying for their own licences. There have also been tentative attempts by white farmers to enter into joint ventures with settlers in the Mateke Hills to market hunting in those properties which appear to have faltered. In Chiredzi District unofficial settlers in the contested Chitsa portion of Gonarezhou National Park have also attempted to establish their own conservancy/hunting concession (Wolmer et al., 2003).

9. Livestock diseases and veterinary services

During village meetings ranking exercises were carried out on 'disease importance' (a combination of prevalence and impact) for cattle. Table 16 provides the data combined from all sites, with no major differences observed across the sites.

Table 15: Ranking of disease importance for cattle – composite rank across sites

Rank	Disease
1	Blackleg
2	Redwater
3	Heartwater
4	Gall sickness
5	Foot and mouth disease
6	Boils
7	Mastitis
8	Anthrax
9	Worms
10	Eye infections
11	Lumpyskin

Source: field surveys

The most important disease according to ranking discussions was blackleg, a disease caused by a soil bacterium. According to Veterinary Department data this has seen a steady increase over time in Masvingo, particularly post 2000 (see Figure 16, above). Nearly 1,000 deaths were recorded from blackleg between 1995 and 2004 (see Figure 17) across the province. A major impact on livestock production and mortality was seen to be through tick borne disease. Mortality was regularly observed especially from redwater and heartwater, with treatment costs being prohibitive and access to the right drugs difficult. The constraints imposed by FMD and anthrax were, however, seen more to do with movement control restrictions imposed by the veterinary department, restricting the ability to seek grazing outside the area and the cessation of sales, both organised and informal private purchases.

In discussions comparing the situation now with before (10 years ago), informants indicated universally the increased prevalence of all diseases, and particularly increases in tick infestation due to a decline in dipping frequency and efficacy (see below). Discussions also noted how outbreaks of infectious diseases, notably FMD and anthrax, had become much more regular, and indeed diseases once regarded as rare were now seen as common.

What became clear during discussions at all sites was the relatively limited knowledge livestock keepers have of diseases and their treatment. While the basic mechanisms of disease causation were well known for tick borne diseases, much less was known about FMD, for example. One theory for FMD offered by informants at the Claire A2 resettlement

area meeting was that 'bombs used during the Liberation war entered the ground and unfortunate animals which grazed in these areas got contaminated'.

This lack of knowledge about disease causation reflects the fact that for many years livestock diseases were largely controlled, and if prevalence increased or outbreaks occurred, these were dealt with effectively by the veterinary department. Veterinary department efforts combined movement control, dipping, disease surveillance, and treatment. While coverage was always uneven, and there has been a long-term bias towards the commercial sector, the post-Independence veterinary service in Zimbabwe was the envy of many.

For example, movement control has long been part of government policy. The Animal Health (Movement of Cattle and Pigs) Regulations of the Animal Health Act [Chapter 121] requires signed permits for the movement of animals from or through 'prescribed areas'. These are defined 'epidemiological units', representing communal areas dip tanks or farm units. While the implementation of these regulations, particularly in more remote areas and during times of drought, has not been perfect, the restriction of foot and mouth disease outbreaks until 2001 to the odd isolated occurrence mostly associated with commercial feedlots, and thus relatively easily controlled, is witness to a largely effective system.

As discussed in Part I section 4 above, dipping has been widespread in the communal areas since the 1930s, with a network of dips established throughout the communal areas, and maintained by government. During the liberation war both the dipping system and movement control broke down, particularly in areas where guerrilla fighters were operating, and older people recall the dramatic increase in tick related disease mortality in that period (cf. Norval, 1979; Lawrence et al., 1980). Since independence dips have been rehabilitated and extended, and, although fees have been introduced, dipping coverage had for 20 years been good. Movement control was perhaps less effective, especially during drought periods (see above), but the permit system was nevertheless active, and clamp downs during outbreaks were largely effective.

From the late 1980s the zonation of the country to comply with export requirements further enhanced the capacity for movement control, with police-manned roadblocks and fences assisting implementation. In addition during the 1980s and much of the 1990s, low cost subsidised treatment was also available through Animal Health Centres, with most basic treatments, together with veterinary advice available within relatively short distances of people's homes.

Today, however, the situation has changed. Dipping frequency has declined, and despite long-standing legal compulsions the regulations are not necessarily adhered to (Tawonezwi, 2005). Across the sites, discussions reported a major decline in dipping frequency with many dips either being non-functional due to lack of water or dipping chemicals and maintenance or only infrequently functioning (see Table 17).⁴¹ Instead of the expected frequency of once every two weeks in the dry season and every week in the wet season, highly variable frequencies were observed for the past year. In the new resettlement areas farm dips were often too far for new settlers to dip frequently, and despite attempts to install new dips, the lack of finance and institutional support had meant that these efforts were limited.⁴²

⁴¹ There have also been allegations of dip tank attendants diverting chemicals for personal use.

⁴² In May 2005 in Chiredzi District veterinary department, for example, shared one working vehicle for the 114 staff on the ground (Mwenezi District similarly had one functioning vehicle). They were trying to recruit 8 general heads and 3 dip attendants. Very few vets were available in the new A1 plots. (Interview, Chiredzi 25 May 2005).

Table 16: Dipping patterns across the sites – now and before (10 years ago)

Site	Before – 1995	Now – 2005
A2 Northdale	n/a	Knap sack spray through race - tickpuster/triatix rotation, weekly (pour-on not effective).
A1 Claire	n/a	Nothing from 2001-04. Started in 2004; now every 2 weeks.
A1 Lonely	n/a	2000-03 no dipping - some farmers practised spray dipping; but from 2003 twice per month.
CA Serima 5	Weekly	Twice per month at local dip; occasional home spraying with Triatix dip. Supplementary sprays necessary because dip quality poor (from early 2000). Lots of ticks even after dipping.
CA Serima 6	1-2 week interval - dip attendant was paid and used to fill the dip.	Irregular - can spend 2 months without dipping, due to lack of chemicals or water, or both. Community supposed to maintain dip and keep water level up, but do not do so. And dip is now very weak. Must do own spray dip in addition (although not everyone can afford - only larger (richer) stock owners). Especially a problem from 2003 when dipping frequency declined.
A1 Magudu	n/a	Last dipped in April 2005 - dam which used to supply water broke and not repaired - borehole not functioning; now farmers use tick grease or own dip spray.
Nyahombe resettlement	1-2 week intervals	Once per month - but not powerful. Prefer to use own spray once per month. "Dipping has no known routine these days". TM lost 24 cattle when he sprayed them with carbaryl when the dip failed to work.
CA Zivhu	2-4 times per month - strong and effective dip	After 2-3 months. And dips are not strong. Better to use sprayers of own purchased dip chemical. Or other pesticides etc. (e.g. Carbaryl)
CA Gororo	1-2 week intervals - better dip quality	2 times per month - but quality not good.
A1 Uswaushava	n/a	Once per month. Some also spraying own cattle.
A2 Asveld	n/a	Former owner supplying dip chemicals - 1 in 3 months - in exchange for use of land as hunting; others spraying own cattle eg once every 2 weeks.
A1 Turf	n/a	Dipping committee buying own dip chemicals at Rutenga and organising dipping - once per month. Collect money for chemicals, transport and food allowance and dip attendant goes. No dipping from 2000 until July 05. From 2000 individual spraying if they could afford it.
A1 Edenvale	1/m dry season; 2/m wet season	Once per 2-3 months depending on chemicals; some buy spray on dip. Committee chosen to run the dip - 3 dips on ranch; one attendant.
CA Chompani	Once per month – 2 weeks	3 months no dipping (November 05) - borehole out of order - council came to see, said would repair pipes - no action yet; disputes with dip tank committee and lack of commitment to bring water from far off sources by villagers. Others registered at Edenvale ranch tank; few others spraying.
CA Batiti	Once per two weeks	Once per two months.

Source: discussions and observations, field studies, 2005

Farmers from Nyahombe resettlement area commented:

Today's dipping no longer follows a known routine. Dip chemicals are said to be in short supply, when available dip is ineffective against ticks. Poor chemicals are the

result of 'manufacturing deals'. They are now producing rubbish. The character of current dip attendants also leaves a lot to be desired. Ten years back there used to be weekly dipping from the onset of rains to May and two weekly dipping thereafter. People have now resorted to spraying own livestock at home. In the past we went to dip tanks because we were afraid of infringing the law otherwise there is no advantage in so doing.

Especially during the land reform '*jambanja*' period movement controls were not complied with, and animals were moved often over long distances between communal areas, commercial farms and new resettlement areas. FMD infected animals were thus transferred to uninfected areas, with a huge growth in FMD outbreaks. In Masvingo province there were 22 outbreaks in 2002, 152 in 2003 and 37 in 2004. However, the efficacy of the resulting vaccination campaigns was constrained by shortages of available vaccine and vehicles and fuel difficulties; vaccinating once rather than twice; and the incorrect assumption that cattle and wildlife were not moving. Also the marked changes in the commercial beef marketing channels and reduced use of the relatively controlled feedlot network (see section 10) meant that outbreaks were relatively more difficult to monitor and control – presenting major challenges for disease control even if vaccinations were available and staff capacity *in situ* to carry out surveillance and control campaigns.

As one veterinary officer put it:

Our control system at ground level has completely broken down... There is little we can do if there is an outbreak of FMD. We cannot even plan a vaccination programme. There is one vehicle for the whole district. It has been grounded for 3 months. There is no transport even if vaccine is available. We can only suspend sales and stop issuing movement permits, but the impact is limited. People just move their animals as they wish without permits, and if they are caught they say they moved during the land reform time. The fences only exist on the map – they are all down. Let's be frank – there is nothing we can do (Interview, 21 November 2005).

In late 2005, across the area FMD continued to be present, although new outbreaks appeared to be rarer. Local indigenous breeds (notably Mashona, but also Africaander and Tuli) are relatively resilient to FMD infection with no major consequences being felt. Local informants used a variety of local treatments (see below) to ameliorate the condition, and in most cases they observed that the infection soon disappeared. However such animals may be continue to be carriers, showing no outward clinical symptoms but nevertheless remaining infectious. Studies in Zimbabwe among largely exotic breed commercial cattle show carriers can continue to be infectious even after vaccination (especially if only one vaccination had been administered without a follow up booster) (see Condry et al., 1985; Suttmoller and Casas Olascoaga, 2003).

Other disease dynamics have also shifted as a result of land reform. Former ranch lands often have high tick densities due to relatively low stocking densities and thick bush and grassland. This has had a major impact on animal health, especially when combined with reduced dipping frequencies. Interactions with wildlife too are increased in such areas, and so the likelihood of transmission of a range of diseases, including of course FMD.

While the details of the current epidemiological dynamics in Masvingo province remain unknown, the likelihood of a more endemic pattern of a range of diseases – including FMD - emerging has certainly increased. While official policy – and the constrained attempts at implementation – remains focused on FMD and animal disease control through eradication, the chances of this being effective remain slim, even as the patterns of land occupation and movement settle down.

Discussions at all sites also focused on disease treatment, again with a comparison between strategies used now and a decade before. Table 18 summarises some of the observations. As discussed above, there has been a tangible shift over the last decade, and particularly in the past 5 years, from a reliance of government-subsidised provision of expert knowledge and advice, including drugs and vaccines, to a much more plural system of animal health delivery. While state-run veterinary services on the ground are by no means absent today, they are, as both farmers and veterinary department officials admit, much more constrained. Unfilled posts abound, as HIV/AIDS mortalities strike hard at the professional cadres, and, even if staff are present they may not have transport, fuel or drugs/vaccines to administer⁴³. The consequence is that the local vet is now only one port of call, and increasingly private suppliers are sought out both for advice and drugs/vaccines (Hargreaves, 2003).

Table 17: Responses to livestock diseases: now and before (10 years ago)

Site	Before - 1995	Now – 2005
A2 Northdale	n/a	Hitet used as a preventative treatment for heartwater - 3 times per season. Vet department vaccination against anthrax, October 2005.
A1 Claire	n/a	Local treatments - but unknown diseases. No vet - nearest trained person at district level AREX. One farmer purchased treatment for heartwater but very expensive. Others bought vaccine against blackleg. Vet vaccinations against Anthrax in 2005.
A1 Lonely	n/a	Local treatments for gall sickness and blackleg. Vaccinations against FMD occurred in 2004; and against anthrax in 2002 and 2005. Post 2003 decline in heartwater problems due to dipping.
CA Serima 5	Veterinary officer nearby; cheap drugs available.	Local vet supplied treatment for heartwater and dosing against internal parasites.
CA Serima 6	Veterinary officer nearby; cheap drugs.	For some use drugs purchased locally (teramycin, hitet, dosing) - from Chatsworth farm supplies; others local remedies (FMD, dosing for parasites). Vet dept only deal with FMD and Anthrax outbreaks - sometimes vaccinate (e.g. for anthrax, Oct 05). "Modern diseases are difficult to know. That is why cattle are dying. The exotic breeds are more common now and are mainly affected" ... "Today the owner must vaccinate and treat at home".
A1 Magudu	n/a	Local treatments.
Nyahombe resettlement	Not many diseases; veterinarians used to come for FMD and anthrax vaccinations.	Purchase treatments for heartwater; otherwise local remedies. Vet came for vaccinations, but was charging per beast this year (Anthrax and FMD).

⁴³ See 'Forex shortage cripples dipping programme' *The Herald* 20 October, 2005.

Site	Before - 1995	Now – 2005
CA Zivhu	Vet officers used to be here. Fewer diseases as dipping was regular and effective and Mashona cattle were resistant.	Vaccination from vet for anthrax; for blackleg/redwater vaccinations purchased; for lumpy skin drugs purchased; no vets coming to vaccinate for FMD - this is locally treated (scrub mouth, hooves etc.). Otherwise for other diseases all local treatments - for roundworms etc. Not a wide range of knowledge of diseases/treatments - no local specialists. No nearby vet officer - referred to Sese 30km away (Museva dip tank) or ask at shops in Masvingo.
CA Gororo		Drugs and chemicals very expensive.
A1 Uswaushava	n/a	Seek veterinary officer for redwater, heartwater and blackleg vaccinations. Local treatments for redwater, FMD.
A2 Asveld	n/a	Rancher supplying drugs in exchange for use of land as hunting; others buying, e.g. hitet (heartwater); supermycin.
A1 Turf	n/a	Requests for vaccination from Vet Mwenezi - no responses.
A1 Edenvale	n/a	Local treatment; FMD vaccination Aug 05; wild cattle on ranch.
CA Chompani	Local treatment; some drugs available from dip attendant - responsible for 4 dips, staying at Mpagati.	Local treatment - especially blackleg and FMD; vet told them to construct a race for vaccination, but they never came. Diseases not as bad as on farms. Tick disease on the increase - blackleg, heartwater, theliosis. Drugs for treatment very expensive: "People go to Chiredzi and look at the price and don't buy".
CA Batiti	Local treatment.	Local treatment; 2004 vaccination for FMD, none in 2005; vet officers stock some drugs and charge for service and sell drugs, but response unreliable - fuel shortages prevented full coverage of Chiredzi south. FMD fence being put up, and then removed.

Source: Field surveys

Veterinary supplies

A survey of stores supplying veterinary products in Masvingo (both in town and in Mucheke township), Chiredzi, Gutu/Mpandawanda, Chatsworth and Ngundu showed a shift in farm supplies retailing. In the past, such stores focused on supplying the commercial farm sector, stocking items in larger doses/packages for the demands of commercial beef and dairy farmers. Communal and resettlement farmers by contrast rarely purchased full price items from such sources and relied on subsidised purchase at the local Animal Health Centre. With the demise of much of the large-scale ranching sector and the declining capacity of government delivery in the rural areas, this pattern has changed. Today, the demand is from communal area and resettlement farmers for particular drugs in small quantities for the treatment of single animals suffering diseases common in these areas. Thus, according to interviews with traders, the major demand appears to be for Hitet for tick-borne diseases, Terramycin (a broad spectrum antibiotic) and dewormers such as Albex and Systemex.

Interestingly, such traders commented that the demand overall had remained reasonably constant, despite the shift in what was being purchased, resulting in turnover and profitability

not being affected in conventional farm stores. Of course the sample was biased in that those being interviewed were still in business. The ghost town feel of some formerly vibrant small service towns such as Chatsworth, located in the centre of a large scale commercial farming district is witness to the decline of business opportunities in these places. But with a shift in land-use, there has been a shift both in demand and in the sources and location of supply. Today the new suppliers are found at bus stands in the townships where farmers from the rural areas come to buy groceries. Very often grocery stores, general suppliers and even small supermarkets have sections devoted to 'farm supplies', including veterinary drugs. Such stores are multiplying and, despite the challenges of operating a business in a hyperinflationary economy where supply systems are uncertain and credit arrangements impossible, many seem to be thriving. Indeed, a number of new enterprises have opened directly as a result of the land reform, with former commercial farmers transferring some of their liquidated assets (and significantly their expertise and staff, including former farm workers) to such businesses in township and rural service centres⁴⁴. As store managers and counter assistants from such shops themselves concede, they often lack the expertise to advise their customers, but other stores have employed former farm workers, with skills and experience in livestock disease management, even if without any formal veterinary qualification.

In addition, and particularly in the new resettlement areas, farmers are taking on the task of prevention as well as treatment. With the decline in dipping, and the frequent observation that current dip efficacy/strength is insufficient (see Table 17), farmers are frequently complementing immersion dipping in tanks with spray dip purchased from the network of farm suppliers and stores described above, making use of knapsack sprayers familiar to the many cotton producers for spray dipping. This is an expensive undertaking, but those who can afford it argue it is saving their animals, and in turn expensive disease treatment. However, again expertise on spray dipping is limited. Those with links with former large scale commercial ranching operations may have some experiences, but largely spraying through crushes in large volumes. Exactly how to administer and how much to an individual animal remains uncertain, and instructions on the bottle are often unclear or imprecise. Some desperate livestock owners have conducted experimentation with pesticides, in one case with disastrous consequences when a farmer in Nyahombe resettlement area lost 24 animals due to spraying with Carbaryl. In Turf ranch resettlement settlers have established a dip committee responsible for rehabilitating dip tanks and collecting funds to send a volunteer dip attendant to buy chemicals from Rutenga.

Commenting on the current set up, a veterinary officer noted:

There is no organized delivery system. In the past CAPS used to train suppliers of veterinary products. The current practice is for big suppliers of veterinary products to sell to shop owners who do not necessarily explain drug use to their customers. The farmer has to know what he wants. Informal paravets are however found in communities. These are either ordinary people or former veterinary staff such as dip attendants who help other farmers with castrations, dosings and injections for a fee. Dip committees made up of community members also exist, but their role is administrative. Dip attendants being employed today must have passed O level, raising an opportunity for training them in livestock disease control (Interview, Masvingo, 5 August 2005).

Traditional treatments of course have always been present for animal disease. But, as noted, and particularly for cattle, these fell into disuse when veterinary services were effective and extensive. Unlike for human health there have never been specialised traditional healers for animals in the rural areas of Masvingo at least. While both this and

⁴⁴ Interview, Gutu Farm Stores, Masvingo October 2005.

earlier studies have documented the range of 'traditional' treatments for different diseases, together with local understanding of epidemiology, aetiology and treatment effects, these have tended to be known about by some but not others, and many simply improvise (using for example Coca Cola together with soot to treat roundworm) (see Table 19).

Table 18: Livestock diseases, local names and disease treatments

Disease	Local treatments
Heartwater (<i>Kuoma susu</i>)	Take smoke formed in roof of kitchen – mix with salt.
Blackleg (<i>Chipfau; Chirwere chamapandauko</i>)	Crushed leaves of <i>mupanda</i> plant in solution. Nest of <i>mbuzvambuzva</i> (wasp-like insect) including eggs and hatched insects mixed with water and salt and fed to animal. Burn with hot iron or hot cloth to activate blood circulation. Chase beast until covered in sweat to dissolve the blood clots.
Foot and mouth disease (<i>Chirwere chamahwanda</i>)	Mix bicarbonate of soda, salt and <i>chiovolo</i> . Scrub sores with salt water mixed with soot. Scrub tongue with shelled maize cob dipped in a mixture of salt and soot and ammonium nitrate fertilizer.
Gall sickness	Cooking oil mixed with warm water.
Redwater (<i>Weti ineropa</i>)	Hitet. Mix <i>nhundurwa</i> (fruits) with <i>lumanyama</i> bark – boil, administer 300ml. Mix donkey dung with water. <i>Mufandichimuka</i> shrub (stem and bark). Crush <i>zombwe</i> leaves or bulb – mix with water – 300ml. Mix <i>hora ye damba</i> , aloe, leaves of <i>masoso</i> and soot.
Roundworms (<i>Makonye</i>)	Coca-Cola and soot. <i>Chibuku</i> scud to intoxicate worms.
Boils (<i>Mamota</i>)	Open abscess and wash then apply <i>murunjurunju</i> , <i>muveghonye</i> and carbaryl, root of <i>muroro</i> and <i>chifana chembudzi</i> (a melon).
<i>Chindee</i> (goats)	Blood from lopped ear of diseased goat mixed with soot and water. Crushed aloe.
<i>Chikwekwe</i> (sweating sickness)	Triatix dips.
Lock jaw (<i>Kuoma shaya</i>)	Hitet.
Eye problems (<i>Zvirwere zvamaziso</i>)	Feeding <i>tsoketa</i> . Piercing cattle's ears with wire. Crushing snail shell and applying to animal.

Source: field surveys

That some of these treatments work, or at least alleviate conditions, is unquestionable. In the past, and particularly for goats which were outside the remit and expertise of the veterinary service, such options were the only route. However, there is little doubt among informants that they are insufficient to deal with the range of diseases affecting often their most valuable assets, particularly diseases of cattle. A disease mortality of a cow, for example, for a farmer rebuilding a herd can be catastrophic, wiping out at a stroke a significant proportion of the household's capital assets, undermining the ability to farm, and so jeopardising any possibility of improving livelihoods. In discussions therefore there was a universal appeal for more effective veterinary services, and particularly dipping and tick-borne disease drugs.

However, quite how such delivery should be designed in the future, given the changes that have occurred and the limited capacity of government to fulfil all elements is an area requiring significant policy debate, as well as institutional experimentation (see Part IV).

Reforms in veterinary service provision started in 1994, with a review of core functions and the beginnings of a move towards cost-recovery for elements of the service deemed to be 'private goods'. A public good role for the service was retained, but focused in particular on assuring exports and monitoring and control transboundary diseases (Hargreaves, 2003). The model adopted followed very much the public administrative reforms of that era, and was allied to World Bank driven conditionalities associated with structural adjustment implemented in Zimbabwe from 1991 (Ilemobade, 1997; FAO, 1999). The new public management themes of private sector involvement, cost recovery, decentralisation and departmental restructuring were seen as a way to overhaul and modernise the system (Hargreaves, 2003). A new vision and mission statement was elaborated and a more demand driven ethos was encouraged. Many of these changes were of course widely welcomed. However, they came at a time when the ability of the service to provide even the most basic needs came increasingly under pressure. In the last few years, as discussed above, this has reached crunch point.

What directions are needed today, which both recognise the new conditions and priorities and also the limitations of a public veterinary service? A number of questions emerge from the preceding discussion which will be returned to in Part IV of the report:

- What are the priorities for research, extension, state and donor support? Should these be export/transboundary diseases or others?
- Disease dynamics are changing rapidly with new epidemiological challenges. What are the implications for new rules and regulations (such as the revisions of the Animal Health Act and associated regulations)?
- Should some level of endemism for a range of key diseases be accepted, simply managing outbreaks? If so, what are the implications for range management, breeding, cropping patterns and land use policy across the sector?
- What should be the role of the state? Is dipping a public or a private task? Given the changed economic environment is spraying by a farmers' group a more effective means of organising tick control than state-run dipping? Should public efforts be redirected to priority areas in resettlement and communal areas? Should intensive dipping along the lines instituted before be reinstated, or should other dipping regimes be encouraged?
- How is public extension changing? What are the new roles for decentralised Animal Health Centres and staff? Is a new group of community animal health workers needed to fill the gap in the rural areas, but registered by the state veterinary service?
- How can animal health treatments be made available in appropriate doses/quantities? How to ensure treatment literacy: understanding the administration and dosage of drugs/vaccines/treatments (through for example reading bar codes)?
- The private sector is playing new roles. Liberalisation has encouraged the entry of new players to the veterinary sector, with store owners, private veterinarians and paravets providing animal health care. What are the new challenges for the state in terms of registration, certification and regulation?

- What new institutional arrangements – from reconstituted dipping committees to community organisations – are emerging for the monitoring, surveillance, and regulation of animal diseases? Do these throw up new possibilities for a more participatory approach to understanding new epidemiological conditions (cf. Catley and Mariner, 2002)? Can regulation and control be built from the bottom up in a more inclusive regulation way?

10. Meat marketing

As discussed in Part 1 section 3, since independence in 1980 there have been some major shifts in the structure and operation of livestock markets in Zimbabwe, with major implications for policy. Understanding the contemporary situation in this light is important, as many assumptions prevail in policy discussions which are open to challenge. The aim of this section therefore is to highlight some of the key changes that have occurred over time, and the emerging patterns evident within Masvingo province. The Masvingo study explored changes in livestock marketing in the post land reform period, focusing in particular on cattle and goats. Information presented in this section is based on a combination of site specific interviews, and a wider assessment of the commodity value chain depicted in Figure 4. The findings explore market relations from sites of production through intermediaries to terminal markets, both wholesale and retail.

Across the sites, discussions highlighted major changes. A number of recurrent themes were evident, including:

- The abandonment of formal sales (in Gutu and Chivi, although not in Mwenezi and Chiredzi districts).
- The growth of sales opportunities from informal private buyers.
- A greater complexity in the marketing system, including the growth in the number of actors.
- The continued difficulties of marketing goats.
- The problems faced when veterinary regulations restricted sales opportunities due to FMD or Anthrax outbreaks.

Yet for many, discussions of cattle sales and meat marketing were somewhat abstract. Over the period from 1999-2004, 4.5% of the total herd of the individual case study households (N=68, excluding A2 cases) was sold, numbering 165 animals in all (56% of the case study sample⁴⁵). The average number sold was 2.5, but there was large variation, with 30 households selling none, and the overall median being 1. A few households, notably the large cattle owners of the Chikomedzi cluster, sold regularly, with the maximum being 30 over the six year period. Annual sales rates ranged from 6% of the total herd (in 2001) to less than 1% (1999, 2000, 2002, 2003).

Informants argued that sales were few especially in resettlement areas as they were trying to build up herds. In other areas many observed that selling unless under duress was not advisable as it would undermine their ability to plough and cut into their savings. For most, sales were seen as a route to raising cash of last resort. Usually only one or two households regularly sold cattle (i.e. those with herd sizes larger than ten), while others who sold did so due to distress requirements (urgent school fee payments, outstanding medical bills, funeral

⁴⁵ NB: the case studies were drawn only from cattle owners, and so this is not a representative figure of the overall population. A significant majority of the total population did not engage in cattle sales at all during this period.

costs etc.). Table 20 shows the reasons for sale of cattle and goats derived from a series of ranking exercises.

Table 19: Reasons for cattle and goat sales

Reason for Sale	Ranking
Household needs	1
School fees	2
<i>Lobola</i>	3
Purchase of breeding animals	4
Agricultural inputs	5
Wages for agricultural work	6

Source: Field surveys

Livestock were sold to a variety of sources, mostly local. Outside Chikombedzi all goats were sold locally, usually on a sporadic basis to local school teachers or other rurally based paid employees, although as noted in discussions the frequency of this was less than before as even among salaried workers cash was always scarce. In Chikombedzi a larger cash market in goats exists thanks in large part to demand from Mozambique (see Box 5 below). Local traders as well as Mozambicans buy up large numbers (up to 100 at a time) and drive them across the border for onward sale in Mozambique and South Africa.

During village meetings, people ranked where the cattle were sold in the recent past. Local beef committees (of teachers, extension workers, police etc, see Box 9, below) dominated, followed closely by sales to speculators and intermediaries at private sales. In some places, such as Claire and Lonely A resettlement areas and Serima, nearby Missions and schools provided a regular market for meat purchases. In other areas (such as Ngundu) butcheries were close by and did not usually require movement permits to send individual animals for pole slaughter. Long term connections between butchery and store owners and particular cattle owners ensured that this route was available in certain places. Otherwise people sold or exchanged to other local farmers, although given the limited resources available in rural areas such sales were said to be very limited.

Table 20: Relative importance of different market options over time

		1982-84	1991-92	1997-98	2004-05
Ngundu, Chivi	CSC/LDT	*****	****	**	*
	Private buyers	***	****	*****	*****
	Butcheries	*	*	*	****
	Local sales	*	*	**	*
Chikombedzi	CSC direct slaughter	*	**	**	*
	Private buyers	-	-	**	*****
	Butchery	-	*	*	*
	Locals (<i>majonijoni</i>)	***	*****	*	***
	Local sales (<i>showini</i>)	*****	*	****	-

Source: matrix ranking exercises - drought coping study 1998; interviews 2005.

Table 21 shows the relative importance of different market options over time for the communal area sites for which time series data from previous studies is available. In contrast to the pattern experienced a decade ago, people commented on the decline in formal auction sales, and complained that, while improving sales opportunities and ease of sale, private sales or door-to-door selling gave lower prices, and opened opportunities for stock theft. People also noted that recently, post land reform, the practice of heifer exchange, pioneered by a Gweru-based commercial farmer and trader (see Box 4) and taken up by many other ranchers from Mwenezi and Chiredzi districts, had declined as their own stock had been disposed of, stolen or moved.

The following sections outline four themes highlighted by the study.

Complex commodity chain: multiple players

As the commodity chain diagrams highlighted earlier (see Figures 1 and 4), the current situation is characterised by a marketing system with many more players, particularly intermediaries of different sorts. There are also more types of buyers – not just the large abattoirs and the CSC, but a plethora of others. Box 4 offers a profile of seven such actors, ranging from small-scale speculators (case 1), intermediary buyers working for a range of abattoirs/butcheries on a commission basis (case 2), a large-scale buyer engaged in heifer exchanges, linked to a well established ranching operation elsewhere (case 3), a new A2 farmer with a butchery and store in Ngundu rural service centre (case 4), a buyer in Masvingo town who supplies his own restaurant and other butcheries (case 5), Masvingo-based abattoir owners with an outreach buying team, linked to rurally-based intermediaries (case 6), and, finally, a rancher/speculator/cattle dealer of long standing from the lowveld who currently leases grazing and formerly had ranching land (case 7).

None of these case studies is in any way 'typical'. What is striking is that there is an enormous array of different alternative arrangements, depending on highly particular local circumstances. What is equally striking though is the dynamism and entrepreneurial inventiveness of this market. This is a challenging time to be engaged in any business, given high inflation, pricey credit and uncertainties on all fronts. But different people have carved out new market niches, with great energy and ingenuity. Not all will survive in such business, and one characteristic critical for survival is to keep changing and manoeuvring as the external economic environment shifts. But this diversity of players and dynamism of their activities is a far cry from the very formalised, organised marketing chains of the past. The CSC, formal auctions, large-scale purchasers from the commercial sector are either absent or much less evident. Today, more people are making a living from the marketing of cattle, even if for each this is not much, and not without difficulty. These 'new' entrants of course include many of the older players in the system, but in new roles. For example, the white owned ranching-abattoir chain which dominated the meat trade in Masvingo for the past decades can no longer operate as it did. It has had to change, even if reluctantly. Former ranchers now without land must run their remaining animals on different patches of leased grazing and have had to diversify their activities to include a greater engagement in communal area and resettlement marketing, often through new intermediaries. Space has opened up for new entrepreneurs too, now able to engage in business and trade in new ways, although with small turnovers and limited profits. Overall, it is a much more complicated commodity chain, based on different principles, relationships and politics.

Box 4: Commodity chain intermediaries

Case 1: In 2002, R who lives at Lundi bridge township in Mwenezi, sold his car for Z\$5m. He was able to buy two beasts which he drove to the nearby hotel where the owner was collecting together animals for transporting to Carswell Meats abattoir in Masvingo. From the profits of this first transaction R together with two friends who joined him in the business, began to build up the volumes of purchase. Today they transport around three truck loads of 25 animals to the abattoir per month. They hire a truck from a former white commercial farmer based now in Masvingo. They purchase animals from all over the area – from Chivi and Mwenezi communal areas, from resettlement areas, including Nyahombe, and from as far as Chikombedzi. Sometimes they buy from auctions too which are held twice a month in Mwenezi district and organised by the council. However they say they cannot wait for the official markets and are always on the look out for animals to purchase. Animals are driven to the Lundi river township and held in a holding ground which is hired from the council. They feed supplements purchased from town as there is no grazing. Once animals have improved in condition and there are sufficient numbers they hire the truck and book them in at the abattoir. A recent initiative has been to buy up heifers from commercial farms near Masvingo. These are transferred to Mwenezi and exchanged for oxen from the communal and resettlement areas. They have received no loan finance for their business. They say that loans from the bank are only for those who already have money.

Case 2: M learnt about the cattle buying business from another trader about four years ago. He worked as an agent for Ndhlovu who, in addition to operating a transport business from Lundi bridge, also bought animals from Mwenezi area, making good use of his connections on the farms there. M decided later to operate on his own as an independent agent. In mid-2005 he was buying cattle from Chivi communal (including Ngundu and Maringire), from Nyahombe resettlement, from Zaka communal and resettlement and from Mwenezi communal areas and as far as Mateke hills. He registers with the local veterinary officer and pays a visit to the local councilor in the area where he intends to buy cattle. Three weeks or a month before buying he visits the dip attendant in the area to spread the word of impending purchases to farmers when they come to dip cattle. As an agent to a number of buyers, M can choose between them on the basis of the prices they offer and the reliability they show. He is currently working with a buyer from Carswell Meats. There are numerous buyers in his area of operation: including abattoirs (Carswell, Cosmeats), butchers (such as at Buffalo Range); former farmers who buy and sell (such as farmers at Mopane ranch and Lundi bridge), as well as buyers from Agri-auctions in Bulawayo or ranchers from Gweru. This proliferation of buyers ensures competition and good prices to the farmers, he argues. The departure of large-scale commercial farmers has seen the increase in the number of private buyers, and the flow of animals through more diverse routes. As an agent, this variety also means that fees are kept reasonably competitive. Different buyers pay fees differently: some pay per kg of livemass purchased, while some pay a fixed amount per beast. By the end of 2005, M had moved away from being an agent based in Chivi to operating from CSC in Masvingo as a buyer, as part of the company's attempt to increase throughput.

Case 3: H has been operating as a cattle buyer in the southern part of the country for more than 20 years. He is well known across the region, particularly in the communal areas. He and his agents have been regular attendees at organised sales in Chivi and Mwenezi for example, buying up communal area cattle for transport to farms in Midlands province for fattening and onward sale. In the late 1980s, H made use of his capacity to breed substantial numbers of heifers on his farm (and purchase more from his large scale commercial farm neighbours near Gweru) to establish a system of heifer exchange with the communal areas. Another commercial rancher observed '[our] main money-spinner is [in 1999] buying communal area cattle, fattening on the commercial farms and selling on at the commercial farm sales for higher prices. You can more than double prices at commercial auction. With a fat steer from an African area – you wouldn't notice the difference [in quality]'.⁴⁶ One or two heifers were offered in exchange for oxen or non-reproductive cows, depending on their size. This was taken up by communal area farmers with great enthusiasm, especially following the 1991-92 drought as a means of restocking without loan finance which at that time was very restricted. The result has been a significant influx of exotic heifers into the communal herd – mostly Brahman and Sussex – which formed a significant base for herd growth in the past decade. In the last few years,

⁴⁶ Interview: Rancher, Mwenezi, 12 August 1999.

following the land reform and the lack of supply of heifers for sale, H and others have reverted to simply buying. He is always regarded as a good buyer, being both reliable and paying a decent price.

Case 4: S opened his butchery in 2001, at a time when there were only two other butcheries in Ngundu (there are now 9). It was good business and was an ideal complement to his store which had run next door for many years. He also had applied for an A2 plot in Mwenezi district as part of the land reform programme, and was notified with an offer letter at the end of 2001 that he had been allocated a plot on Sheba ranch in Mateke hills. When the butchery opened in 2001, he sourced his animals from the Gutu/ Vuswaushava area along the road towards Chiredzi. This is a new resettlement area, which was invaded in 2001, and is at the top end of the vast Nuanetsi ranch. He would buy one beast at a time and slaughter across the road at the township. In good times when demand was up, he would slaughter 3 or 4 beasts a week, but now it is only about one. He had no problem with getting animals – there is always someone in the area wanting to sell a beast. He looks for animals in reasonable condition, and does not prefer bulls as the meat is not so good. He has attended a couple of auctions over the last four years, but tends to go alone with his own pick up. In 2002 he purchased 30 heifers which were going cheap at an ARDA ranch in Chiredzi district, and these were left at Vuswaushava on a loan arrangement, looked after by three boys. For a period, he also slaughtered his own beasts and brought them to the butchery. However, these were transferred to his new farm in Mateke hills in August 2003, leaving only a few behind. Mateke hills is too far away (over 150kms) to bring single beasts for slaughter in Ngundu, so he has since relied on his old network of contacts in the new resettlement area for supplies of slaughter animals.

Case 5: R owns a fast food café in Masvingo. He has been in the beef marketing business for two years – having been on the look out for new business opportunities. He owns his own lorry and sources cattle from communal areas and resettlement areas in Mwenezi District and resettlement areas in Chiredzi which he provides wholesale to butcheries and supermarkets (TM supermarket, Stopover supermarket, Balmain supermarket, Spar, Sam's butchery). He attends public auctions where, by his own admission, buyers collaborate beforehand to decide on a strategy and prices, and also negotiates private sales. At private sales it is a matter of negotiating and agreeing on prices with seller - in May 2005 he was buying at \$22,000/kg livemass using a weigh belt. He is accompanied by a policeman and a vet to the point of sale where clearance forms are signed by the buyer, seller, kraal head and village witness, police and vet. Usually he uses Kismet and Tafira abattoirs in Masvingo which are smaller and cheaper and Carswell, Montana and CSC. However, if selling to TM Supermarkets they require animals to be slaughtered at an established abattoir. Most of his competitors sell direct to abattoirs rather than selling on to retailers. He has recently received an A2 farm in Mwenezi (500 ha in Buby River Ranch) and plans to ranch his own cattle there.

Case 6: Carswell is an established abattoir that has operated in Masvingo for many years. When the commercial herd was still intact they would sometimes book 500-1000 head at a time. Carswell will collect free if there are more than 35. However, the growing trend now is for 'walk-ins' of 3-4 or 8-10 animals. Increasingly, the former ranches who supplied their own stock to Carswell are operating as speculators – organising sales from the settlers on their properties or in communal areas and booking them into Carswell. They also take 50 goats or sheep a month; in May 2005, for example, they took more than 170. Bookings were full in 2005 given the drought conditions. Carswell have five buyers who attend auctions and arrange private sales. These include the manager's two sons. He envisages in the future having up to 20 buyers arranging small 5-6 animal sales, putting on holding grounds and then taking lorry loads to the abattoir.

Case 7: V operates as a livestock speculator from a ranch in the Mateke Hills operating in Matibi II and Sengwe communal areas. In the 1990s he was buying goats for export to Mauritius – and providing exotic goats for local farmers to fatten. He used to be able to buy 4-5 animals at a time with ease – but now he has finding it harder to buy in larger numbers attributing this to the fact that speculation becoming a lot more competitive – with more people approaching headmen to secure preferential access. He has reputation in communal areas as 'good buyer' – but buys on account. He no longer attends fixed auction days but advertises through word of mouth and with flyers the days that he will be buying in an area.

Source: Interviews 2005

Risky businesses, real markets

The nature of the cattle business has thus changed significantly in the last few years. Before, a limited number of buyers would purchase at fairly standard prices, often at formal auctions. The marketing chain was dominated by a relatively small group of players, mostly white ranchers and abattoir owners together with the CSC. Ranchers would buy from the communal areas and fatten on their farms, selling on at premium rates to the private abattoirs. In parallel the CSC would purchase at auctions and would again use their holding ranches for fattening before slaughter at the CSC plant. Few animals from the province would end up in export markets, although there was some movement of animals to the highveld export zone, particularly from the Gutu ranch areas around Chatsworth. The turnover of the CSC and some of the larger ranchers was significant with hundreds of animals being slaughtered each week at both CSC and private abattoirs in Masvingo. Most animals were high grade, getting premium prices, and so those with access to land and resources for fattening were able, even in the absence of export markets, to make significant returns. With plenty of land and a guaranteed price, even if with reductions in subsidies over the 1990s, ranching was a reasonably viable business, as long as not too many losses were made in times of drought and disease outbreak. Most private ranch businesses were diversified, with transport, retail and increasingly wildlife/hunting operations complementing the ranching/meat marketing side. For the CSC of course the business continued to run at a loss, as it always had, but as a 'strategic' industry it continued to be bailed out by government.

Today this past pattern no longer exists. With a larger array of players in the market, running on smaller turnovers and lower margins, the risks for any player is greater. No longer is there an availability of large tracts of land for fattening up cheap animals bought from the communal areas. With land occupation and reform there has been great insecurity and much cattle theft. And the guaranteed prices and markets are no longer present, as with inflation running at 900% any price regulation is meaningless. Inflationary pressures have also meant that capital is scarce and expensive, and borrowing is extremely risky. So any large-scale operation relying on anything but immediate cash transfer and expenditure is likely to be high risk. Those able to operate must speculate on prices and inflationary movements of different goods, and try and transfer cash in local currency into a useable asset as quickly as possible. This is possible for the smaller operators who are making small profits to fund day-to-day needs, but it is not the basis for longer term investment and business development.

Offsetting risks is all. And this requires careful financial manoeuvring and hedging, including complex strategies of diversification, with multiple eggs in multiple baskets, and livestock trading/speculation part of a large portfolio of livelihood activities. Risk spreading and avoidance also requires tapping into and developing social networks that allow things to run smoothly, reducing the sometimes hideous transactions costs of operating in such a complex, high inflationary economy, where uncertainties prevail at every turn.

The social networks on which the 'real' markets of the beef industry operate have changed beyond recognition. As discussed above, the pattern prior to 2000 was based on a fairly tight, often racially defined, integration of a limited number of players who had strong connections often based on many years of interaction. The white rancher- speculator - abattoir owner/operator chain was one that had developed over the past 50 years, with strong business, friendship and kin relations being the basis of the network, reinforced in turn by a tight, rather insular social milieu centred on the sports and social clubs of regional towns such as Masvingo. Recent events have shattered this social and economic world, often with traumatic consequences for those involved. While in the past white business interacted with African producers and labourers largely on their own terms, this is no longer possible. Both the political and economic conditions have changed so radically that the

functioning of the cosy, inward looking social basis of business and trade is no longer feasible. Instead, new relations have to be brokered, with new entrants coming into these networks, and indeed wholly new networks being formed.

There has been an emerging black business and political elite which has been involved in the livestock trade for some time, but mostly around transport and butcheries. However, land reform, and the associated political and economic shifts, has changed the landscape radically. New alliances have to be formed, and ones that make political sense, often at a very locally specific level. Those who formerly dominated the beef trade have responded in different ways. Some have given up; others have retreated into smaller operations with old networks; while others have begun to negotiate new relations which accommodate new political and economic realities. Little is known about these new networks and many remain clandestine and informal, but they suggest some important new social, political and racial contours of the business environment for meat marketing in Masvingo province, and beyond.

Escalating transport costs due to high costs and recurrent fuel shortages mean that no business, whoever is involved, can rely on significant transport as part of the cost structure. A hike in fuel prices, or a reliance on the black market, could mean a profitable venture is turned into a loss making nightmare at a stroke. There is thus a greater move towards localisation of commodity networks, with supply and demand being more closely linked. Thus transporting animals from communal areas in trucks for fattening in another province on a ranch is no longer feasible, and animals must either be moved directly to slaughter in large enough numbers to make it economically feasible, or sold locally to butchers, local dealers and others. The growth in local butcheries in places like Ngundu (see below) is phenomenal and reflects this dynamic.

This growth of local level economic activity means that supply and demand has to be more closely matched. There is no way a 'super' grade animal is going to be sold at premium prices in rural townships. Thus the demand for higher quality animals has all but disappeared. While the CSC and the urban abattoirs will source such animals and sell on to retailers, this is no longer the dominant component of the commodity chain. With exports very limited, there is a flooding of the marketing of high grade meat, far exceeding demand. The surplus must either be sold at a loss or disposed of in other ways; the CSC, for example, has to get rid of it in rations for the army.

In this new market it is only the flexible, fleet-footed operators at any part of the value chain who can make a go of it. The cumbersome, bureaucratic and highly capitalised CSC looks even more of an anachronism than it was a few years ago. There is little likelihood of the huge investments made in the infrastructure of the old style meat industry making any return in the near future. Some radical re-thinking is clearly necessary, something that as yet has not happened.

Illegal trade

While the patterns described in the previous sections suggest new arrangements for the formal commodity chain, this is only part of the story. Illegal trade is perhaps now more important than ever. Rustling and livestock theft have of course been long part of the livestock economy in Zimbabwe, especially near the border areas with South Africa, Mozambique and Botswana. Increasing levels of border control, including fencing and manned border posts, restricted this to some extent, but there were always regular police reports of thefts and rumours of well-organised rustling groups operating particularly in the lowveld areas.

However, the period from 2000 saw an explosion of such illegal trade. For some, the illegal acquisition of cattle from the large-scale ranches which were invaded from 2000 onwards by groups of war veterans and other villagers across the province was seen as part of the occupation process. 'Confiscation' is the term used by many who benefited, something they see as distinct from more standard 'theft', which is of course what the former owners call it. But in the *jambanja* period the boundaries between legality and illegality were extremely blurred, and political justification for acts that otherwise would have been seen as improper were often used. No-one knows the number of animals that transferred hands without payment during this period.

This period also saw an increase in illegal movement of animals across borders. A considerable number of animals were apparently moved to Mozambique for instance by ranch owners and farmers removed from their land by invaders during the land occupations. Again the evidence is anecdotal and figures are difficult to estimate, but certainly not all the animals removed from the commercial herd were 'confiscated' locally or disposed of through formal sale or slaughter within Zimbabwe. The confusion and lawlessness of this period also provided an opportunity for criminal elements to steal large numbers of animals and move them across borders illegally. Often working in gangs, Mozambicans worked with locals to steal animals both from the ranches and from the communal areas, often in large numbers. While in the case studies no cases were reported in this period, there were plenty of examples people offered, particularly from the Chikombedzi area, where sometimes violent attacks were made and whole herds removed during the night.

This sort of rustling has declined in the last 18 months, particularly following the intensification of local concern and police activity after a particularly gruesome attack in the Chikombedzi area (see Box 5). However, there persists an on-going cross-border trade of both cattle and goats between Zimbabwe and Mozambique. This now involves well organised Zimbabwean and Mozambican traders who purchase animals in large numbers and trek them illegally across the border to the rail post at Chikwalakwala for transport by rail to Maputo, and across the border into South Africa for sale in local townships. This is a highly lucrative trade operated in the now valuable Mozambican currency, *metacais* (see Box 5). This is of course a dramatic reversal of the trade of only a decade ago when Zimbabwe dollars were in great demand in Mozambique and Mozambicans sold their animals in Zimbabwe, often coming across the border to work illegally on farms or in the communal areas.

Box 5: Illegal trade in Chikombedzi Area

Cattle rustling

Cattle rustling reached epidemic proportions in 2004 in the Chikombedzi region of Chiredzi South – with those living close to the Mozambican border particularly badly affected. Many cattle were being stolen to order by locals for Mozambican cattle dealers who sometimes provide weapons. One cattle owner, for example, lost ten beasts. He hired some men to track them and they were found to have been taken to and slaughtered at the Sango/Chikwalakwala border post with Mozambique – and the meat carried by train to Maputo. The local person suspected of stealing the cattle bought a new car but was then involved in an accident and died. The cattle owner took two new bicycles from his home as compensation. Other cattle are taken live to camps in the bush and from there to various locations in Mozambique. Rustling has caused great enmity – there have been accusations of complicity by border guards and that local Mozambican authorities appropriate recovered cattle and there have been cases of violent reprisals against suspected local cattle rustlers leading to several deaths. After one incident the community all made donations to demonstrate solidarity and also attempted to use CAMPFIRE funds to bail the mob who had been charged. A revenge attack on one man accused of reporting rustlers to the police left him, his wife and two children shot dead. Many cattle owners are now reluctant to enter into *kufuyisa* (livestock loaning) arrangements – or even employ herd boys – given fears of rustling.

Goats to Mozambique

Goats, including stolen goats, are loaded on to donkey carts (up to ten at a time) and taken around Gonarezhou National Park into Mozambique and up to the railhead at Sango/Chikwalakwala border post. They are sold to railway staff who take them on the train directly to Maputo where they are sold for meat or even exported to Mauritius. The goats are paid for in *metacais* or bartered for rice, clothing, hoes and axes. During the period in which new fields were being opened up by settlers, axes, hoes and sickles were in particular demand in exchange for goats.

Game meat and the biltong trade

Settlers and poachers in and around the Mateke Hills areas have set up temporary camps where biltong is produced from snared game. As well as for local trade for settlers and neighbouring communal areas buyers come from as far as Beitbridge – including women carrying Shangani bags which are filled with meat buried beneath clothing. The biltong is then sold on to traders or taken to South Africa.

Source: fieldnotes and interviews

The availability of game meat has grown dramatically, if temporarily, since the land invasions of 2000. For some time, and particularly during the extended drought from 2002-05, game was for some a key source of food and income. Described by some as 'wanton destruction', for many game hunting has been a key livelihood strategy. For some it has been based on opportunistic killing of game when it has been encountered. For others it has involved a more systematic harvesting, including the laying of snares, traps, using dogs and sometimes hunting with guns for larger game animals. The decline in game species on the former ranches has not surprisingly been significant. Such hunting has extended into the parks estate, with significant activity being observed in the Gonarezhou national park. New meat markets have therefore emerged. Most are local, with parts of animals killed being disposed of quickly in the local area for small amounts of cash. Some game meat has found its way into towns and via informal sales in butcheries and through meat purchasing committees (see below), but clampdowns by the police through road-blocks and the health and safety inspectors has made such trade risky. Others have started new businesses involving cross-border trade, including the processing of different types of game meat into biltong and its transport across the border for sale in South African townships as far as Gauteng (see Box 5).

Retail revolutions

The study looked at the changing nature of the retail/wholesale market across the province, including case studies in the largest urban centre, Masvingo, a rural business centre, Ngundu and within the rural areas. Different outlets exist in a highly differentiated market, ranging from large chain supermarkets to butcheries which source their own slaughter animals to butcheries linked to farms to the informal sales in the rural areas to so-called beef committees, or indeed unregulated sales of meat at a village level.

The study attempted to untangle this complex wholesale and retail market, both formal and more informal, and ask how it has changed in recent years. As with the process of livestock purchasing there are now a significantly increased number of players at all levels, with increased competition among retail outlets, wholesalers and processing abattoirs alike. Unlike the past when the market was dominated by the CSC, with a limited number of retail outlets, today there has been a massive growth. The number of butcheries in Masvingo in Ngundu for example have multiplied five times in the past decade. The number of abattoirs has also doubled.

Land reform has had a number of specific impacts, with increases in supply of animals of low grade (economy/manufacture) from the rural areas. But also businessmen may now have access to A2 plots and sources of animals that can be linked to urban butchery businesses. The changing supply base for the meat market has meant that the high-end abattoir facility constructed by CSC is massively underutilized. The facility was designed for a through-put of 500 animals per day. Currently less than 20 per day are being slaughtered, 70% of which are customer service slaughters for individuals and butcheries. The remaining 30% are CSC's own animals either from remaining CSC ranches or from animals bought in the rural areas by CSC's 2 buyers⁴⁷. With the virtual demise of the CSC, other abattoirs have taken up the market as they can deliver processed meat at much lower prices (as much as 50% lower than CSC). However, private abattoirs do not have the capacity to make use of a range of other animal products, including tallow for soap making; meat and bone meal for stock feeds; blood meal for stock feed and gall production for medicines. At present only tail hairs for brushes, horns and hooves for glue and hides are collected by the CSC, but in much smaller quantities than before.

The following sections offer an overview of this dynamic setting, offering a profile of the marketing set up in both Masvingo and Ngundu, together with a series of case studies highlighting the contrasting business profiles of different operations, both retail butcheries and abattoirs.

Masvingo: meat marketing in a provincial town

A total of 31 butcheries were surveyed in Masvingo, with most being in the 'township' area (20) and the rest in 'town' (11). Town butcheries are dominated by supermarkets five of which have butcheries. These include local supermarkets established by Masvingo based businessmen such as Tsungai, as well as well known chains including OK, Spar and TM. Bar one supermarket (Tsungai) at the township bus rank, the remaining 19 butcheries outside the central urban area are small butcheries. There is one 'chain' with three outlets run by one family business, Rashai Foromo, and all the rest (16) are businesses owned by individuals.

In terms of throughput, the five supermarkets are averaging 5.5 carcasses per week, the four larger butcheries average 8.5 carcasses per week, and the remaining 13 average three carcasses per week. Thus around 90 carcasses are sold on through butchery outlets in Masvingo each week, 70% of which is through independent butcheries and 30% through supermarkets.

Apart from the supermarkets, some outlets are only butcheries (12), while others are linked to other general stores or bottle stores/bars (14). The combination of a butchery/store/bar is a classic route for business development by African entrepreneurs and has been for a long time. Increasingly though owners of butcheries are professionals, including government civil servants, investing in urban businesses to complement limited salaries. Others have braai facilities and offer meals, although a number of these were closed down recently due to hygiene concerns. Of the 31 butcheries surveyed nine source meat wholesale from abattoirs. In the past, CSC was the favoured supplier as it offered graded and CSC roller-marked meat. However, supplies have been poor since 2000, and other sources, notably Triangle and Chimombe Ventures, have been used as the source for some. Others still rely on the CSC arguing that it can deliver the type of quality required in terms of grading, hygiene and refrigeration (see Box 6).

⁴⁷ Interview, CSC, Masvingo, October 2005.

Box 6: Supermarket butchery

TM supermarket sources meat from CSC, Carswell Meats and a CSC member of staff who buys cattle for slaughter at CSC in his own capacity and sells on. Two other local entrepreneurs are used as occasional suppliers. TM insists all its meat is slaughtered at CSC because of the high standards and the fact that they dispatch chilled meat. The supermarket buys six head of cattle per week, and occasional goats, as well as chickens. As of October 2005 the prices for meat cuts were as follows: Fillet Z\$43,000, Rumpsteak Z\$41,900, Sirloin Z\$39,000, Topside Z\$38,900, Thick flank Z\$38,900, Silverside Z\$38,900, and T Bone Z\$38,000. Meat is processed into boerwurst, sausages, biltong and mincemeat. They also sell a significant amount of offal. Municipal health technicians make random visits, sometimes accompanied by nurses from the general hospital.

Source: Interview TM Supermarket Butchery, Masvingo October 2005.

The rest source their own animals directly from nearby rural areas, mostly from Chivi, Zaka and Bikita, or at least in part from their own often newly acquired farms (see case 2). Sourcing in small numbers is increasingly costly due to both rapidly escalating transport hire costs, fuel shortages and the requirements of both the veterinary department (for movement control) and the policy (stock theft unit) to accompany and register any local sale. Some have abandoned local sourcing and accept the higher prices in wholesale markets at the local abattoirs. Larger outlets, including Tsungai supermarket and the Rashai Foroma chain, source from wholesale markets, as well as direct sourcing for slaughter at local abattoirs, and, in the case of Foroma, from their own farm too.

All butcheries have relations with local abattoirs. There are five beef abattoirs in Masvingo urban/peri-urban area, including three large A-B grade abattoirs (CSC, Carswell and Montana) and two smaller outfits (Kismet and Tafira). Different butchery outlets have different relationships with the abattoirs. While all agree that the quality of service is high at CSC, many smaller businesses complain of the costs, and the fact that the CSC takes away tallow. Montana buys, slaughters, processes and transports directly to Harare and so is not so involved in the local trade. Carswell, on the other hand, is seen by many as a good alternative to CSC, offering good service at reasonable prices. Others, however, prefer the cheaper out-of-town services of Kismet and Tafira abattoirs. The majority source for the wholesale market in Masvingo remains CSC, followed by Carswell and with a few sourcing from private buyers who oversee slaughtering at CSC/Carswell. Of the retail butcheries, most of which are small-scale, the preferred abattoir currently is Kismet, followed by Tafira, Carswell and finally CSC. Although Kismet and Tafira were temporarily closed by Operation Murambatsvina over concerns with hygiene standards, and the general recognition that these abattoirs are not the best, the cost advantages, according to most informants, outweigh these drawbacks.

Five butchery outlets process their own meat – including sausages, mince meat, biltong and cooked products. These include the major supermarkets and one butcher cum restaurant in the township. Others say that processing despite added value is too expensive in terms of labour and inputs.

The regulation of meat hygiene is carried out by the Municipal Council of Masvingo by the Health Inspectorate team. They aim to inspect each butchery every week, but due to fuel and other constraints this has proven impossible. The rapid increase in the number of small scale butcheries operating in the town in the last few years has also made operations difficult. The Masvingo Environmental Health Officer commented that 'Operation Murambatsvina' between May and July 2005 which destroyed shacks and illegal vending sites was helpful in renewing conformity with meat hygiene in outlets where negligence had

crept in. The municipality has traditionally carried out random raids to stop illegal vending, but this had not been possible in recent years.

Box 7: Masvingo abattoir

Kismet abattoir was established by Mr. N.A. Khan in 1994 on his ranch on the outskirts of Masvingo. The farm serves as a holding pen for customer's livestock before slaughter. He no longer keeps his own livestock on the farm because of an increase in stock thefts and poaching.

All animals are slaughtered according to Halal requirements with a meat inspector from the Department of Veterinary Services to inspect for diseases. A grader from CSC is used for grading and roller marks. All deliveries of animals to the abattoir must be accompanied by clearance forms from the police and a movement permit from DVS. As well as the Halal slaughterer 4 skimmers, a general hand, a clearer and a manager are employed.

After slaughter a beast is cut into 4 quarters at \$400,000 per beast (October 2005 prices). The abattoir takes the hides and not the fat. The abattoir mostly caters for butcheries in Masvingo's townships. Only one urban butchery (Kismet) uses the facility. The throughput target is 20 cattle per day, but this was down to ten in October 2005 due to fuel shortages constraining the ability to fetch slaughter stock from large catchment area which encompasses Mwenezi and Chivi Districts.

Source: Field survey

Ngundu: meat marketing in a rural business centre

The longest established butchery in Ngundu dates from the 1980s, but most were established in 2003-04, totalling nine in 2005. All are locally-run businesses sourcing cattle from nearby communal areas, mostly Chivi. Earlier butcheries sourced from CSC, but now the local market dominates. Oxen predominate cattle slaughtered followed by old or non-reproductive/mastitis affected cows. Each employ between two and four workers. Throughput is limited, ranging from one to five beasts per week. Increased competition in Ngundu from 2003 has squeezed profits and reduced turnover in each butchery. Limited variations in price are observed between butcheries. A flat price for beef is offered, with no differentiation between cuts. Goats and other stock are not sold. Hungoidza butchery still offers *braai* services, attracting extra customers. Hungoidza also makes biltong and hand-made beef and pork sausages. Others have been stopped by Council health and safety inspectors. Hides are sold on to traders who come from Masvingo or Bulawayo once every month.

Box 8: Hungoidza butchery

The current butchery was established in 1994 as a family concern together with Mr Mudzviti's late father. His father was into retail businesses and butcheries, so had knowledge of the trade. In 1994 they used to source animals from CSC and Colcom in Masvingo, selling both pork and beef. Today they source locally from Nyahombe resettlement, Mwenezi communal areas and Maringire and Razi in Chivi. Most are oxen (55%), followed by cows (45%). Only 5% are bulls which are not favoured for meat. They also make biltong and beef and pork sausages. They get pork from their own farm which is along the Mutare road nearby Masvingo, using local slaughter as Colcom has now closed in Masvingo. 5 pig carcasses are sold a week as pork meat, sausages and bacon. They charge a flat price for all cuts of beef, with almost all of the demand being for mixed quality 'nyama', although this is now expensive. They have their own transport, but running costs are high and fuel is often not available. Major constraints to the business include the declining demand for beef as people can no longer afford the prices. Ensuring effective refrigeration is also a challenge due to regular power cuts in the area. They plan to increase their profits through the sales of processed products, and hope to purchase a sausage-making machine to increase efficiencies.

Source: Field survey

Rural meat marketing: communal and resettlement areas

There is also a local market for meat in rural areas. Local sales of cattle for beef tend to be often deceased, or sick/wounded beasts. As a new entrant to the cattle buying business in Chikomedzi put it: 'We are willing to buy moving bones not fat animals'. We want to buy cattle that are beyond recovery – no matter how thin. Diseased cattle will not discourage us'.⁴⁸ Local markets for goat meat are well established with the vast majority being slaughtered locally rather than making it into urban markets. With no organised marketing outlets sales continue to be an opportunistic coping strategy and often dependent on people with wage income. (cf. Scoones et al., 1996; Wolmer et al., 2002). However, hyperinflation has reduced wage levels and suppressed sales.

Box 9: Local meat marketing

'Beef committees' consisting of salaried workers – usually teachers – who pay a monthly amount into a shared pot for the purchase of cheap beef constitute a significant market for beef in the Ngundu cluster (ranked third in importance by livestock vendors after selling to local butcheries or to traders such as those exchanging heifers [see box 4]).

Source: Field surveys, Zivhu and Gororo villages

Across these four themes, a number of policy issues arise. Here a number are identified as central to future discussions on ways forward for livestock marketing in Masvingo and beyond.

- Contrary to some of the more pessimistic proclamations of the current situation, it is not that there are no markets today, there are just very new markets and commodity

⁴⁸ Interview, Chikomedzi 7 May 2005.

chains, associated with different players, new sources of supply and different patterns of demand.

- These new markets are based on different social and political relations, and a different type of organisation. Governing such markets (including regulating, taxing etc.) will be a different task to that which existed before, one that is possibly impossible, certainly under prevailing conditions.
- Given the volatility and uncertainty associated with the current economic environment, such new business and trading enterprises must operate under incredibly difficult circumstances, at whatever stage in the commodity chain. There are a variety of mechanisms operating to reduce risk and increase the reliability of returns, but these do not always work. The need for some form of economic stability is clearly essential.
- What is a 'viable' enterprise under prevailing conditions is not at all clear. Time will tell which operations survive and which fail. But while there will inevitably be a shake-out the result will not look like the centralised, integrated commodity chain of the past dominated by a few players.
- With more players and more interactions there are benefits and costs. More people benefit from the market, but with a greater number of intermediaries there are dangers of rising transactions costs, inefficiency and capture by sectional interests.
- The lack of a large-scale processing operation and the diversion of meat through numerous outlets, from single pole slaughter to small-scale abattoir, means that the systematic collection and processing of by-products has declined. This means that the former role of CSC abattoirs in passing on export quality hides and skins, producing tallow and bone meal has declined significantly.
- The prospects of a high-value, top end market for meat emerging out of this looks remote, unless a very niche specialisation for a few players. Whether this can result in renewed exports as assumed by many of those who formerly dominated the industry is seriously open to question.
- The positive side of the emerging story, however, highlights the dynamic entrepreneurial activity that has emerged. But this of course is reliant on both continued supply and continued demand. With few new farmers – like most existing communal farmers - having enough animals to sell regularly, the market is going to be reliant on a limited, but steady flow of relatively low-grade animals sold by farmers who keep them largely for other reasons and dispose only when they have to.
- Small stock and other meat markets have not flourished in the new setting, as they have not before. This is perhaps unexpected, given that some analysts assumed that the lack of supply of goats to urban markets was not because of low demand but because of the dominance of the meat commodity chain by a few actors all specialising in cattle. However, currently the profits to be made in goats remain small, unless through illegal exports where dealings occur in foreign exchange.

Overall, the question has to be asked: does the existing infrastructure and associated policy framework make sense any more? Is this an anachronistic heritage from a by-gone era, one that probably did not make economic and political sense before land reform, and certainly does not now? This rather far-reaching question is one that we turn to in Part IV of this report.

11. Interactions with former commercial farmers

The rapid and far-reaching changes to Masvingo's farming sector beg the question: what is left of the former commercial farming sector, and what has happened to these farmers? Throughout the case studies explored in the sections above frequent mention has been made of the on-going roles of former (white) commercial farmers. With such uncertainty over individual farm cases, and on-going attempts to acquire properties even today, there is a not-surprising reluctance to discuss these cases. Given the highly politicised nature of the land reform process, and the legal contention surrounding it, there is a real tendency to exaggerate the situation, with broad brush and unsubstantiated statements made in all directions, depending on who is making the claims.

The provincial CFU estimates that its membership is down from 240 pre-land reform to 80-90 today, with many of those remaining members not engaged in productive activities.⁴⁹ While not collected in detail, information was gathered for each of the sites on the location and occupation of former farmers and their workers. There was wide variety of stories, all individual and particular. In a few cases – as in Northdale in the Gutu cluster - the farmer had left, apparently having given up farming and was living in Bulawayo, where he had business interest and property, but some of his workers had been retained by the new settlers.

In other cases, as in the case of Lonely A and Claire, the new resettlements were a small part of much larger family land holdings across numerous properties. While in their case the total area still being held was a very small proportion of the former land area, there were still farms being used, even if associated with on-going disputes. Of the two former owners, in one case the former farmer had left the country to take up farming on new property acquired in Zambia, while in the other case, the farmer had remained in Zimbabwe and was still overseeing what remained of the family business.

In the Ngundu cluster, the new resettlement areas (at Uswaushava) were allocated on former Development Trust of Zimbabwe land, part of the vast Nuanetsi Ranch. Much of the ranch had remained intact, and good political connections ensured that little was resettled, beyond some small areas on the borders, as in this case.

In the lowveld sites, both in Chiredzi and Mwenezi districts, the former farmers were in several cases still resident on the farms. As part of the resettlement only portions of what were very large properties were allocated for A1 or A2 and the farmer was allowed to stay at his homestead with a much more limited area of land for the farmer. This was the case in Edenvale, Asveld and in Fair Range, although the former owners of Fair Range Lot 1 were evicted, and continue to fight a legal battle to regain access. The former owner of Turf ranch had been an absentee owner for some years, and remained in South Africa.

Exactly what happened in each case was dependent on complex local negotiations, informed by past histories and political connections. What is clear is only that there is no simple story. Indeed the situation is so in flux that it is difficult to predict from day to day what will happen. This is creating major uncertainties for everyone. Meanwhile, those former commercial farmers who are still engaging in the farming business – and some of course have little option with no other place or business to turn to – are deploying a variety of strategies for managing livestock, including:

⁴⁹ Interview, Masvingo CFU, November 2005.

- Leasing grazing from whatever source is available. In Masvingo province this has included: Nuanetsi ranch, CSC and new resettlement areas. One rancher, as of November 2005, reputedly had cattle on 11 separate farms.
- Providing services (water pumps, veterinary drugs, transport or fuel) in return for access to paddocks on their (or others') former ranches.
- Operating as 'speculators' – buying cattle in new resettlement areas, taking to a holding area or direct to slaughter once they are sufficient in number for a lorry load.
- Exchanging heifers for communal/resettlement area oxen for fattening and sale (as has been practised since the 1980s).

Other interactions described in the report include: assistance in marketing and transport of livestock for sale – as the former owner of Asveld has been doing for the new A2 settlers, for example; running safari operations on resettlement areas (sometimes in joint-ventures) and negotiating for hunting access (either as the pre-existing licence holder or negotiating with the new holders); providing veterinary and extension drugs and knowledge; hiring out equipment (tractors and other services); providing water services (pumps, drilling boreholes) and operating stores and inputs supplies.

In some respects these operators are taking on public roles formerly undertaken by government agencies such as AREX (extension advice) or District Councils/DDF (borehole drilling, ploughing etc.) as private sector operators. With much accumulated experience and many skills in farming in difficult environments, former commercial farmers – and their workers – will, as many recognise, play a role in the future regeneration of the agricultural sector. That this will not be on the same basis as before 2000 is clear, but clearly a number of critical roles are emerging already which may be worth capitalising upon.

The preceding sections have posed a number of far reaching questions to which we return in the following concluding section which poses the question: which way now for the livestock sector in Masvingo province, and in Zimbabwe more broadly.

Part IV: Implications and policy options

This report has presented a picture of changes in the livestock sector in Zimbabwe based on a provincial case study from Masvingo. Part IV asks what are the implications of these findings for policy and practice? What does the future hold for the livestock sector and what forms of external support make sense?

A number of patterns emerge from the study. These include:

- The former commercial herd is much reduced, but a core still remains, managed through new relationships.
- Questions remain about access to quality breeding stock, both in respect of commercial breeds and, perhaps more significantly, indigenous breeds.
- More commercial herds remain in the drier parts of the country than in the former export zones of the highveld. This perhaps signals a return to the earlier pattern before the late 1980s.
- New commercial herds are being established on a small scale in the resettlement areas, notably A2. Stocking strategies are, however, currently focused on herd building, and herd structures are not yet geared to beef production.
- Although total cattle numbers at national and provincial levels are down due to offtake, illegal export and drought/disease induced mortalities, these are not dramatically lower than totals over the last 30 years.
- There has been significant redistribution of animals to the new resettlement areas through purchase, theft, share grazing or loaning arrangements. The new A1 resettlement areas already have a significant number of stock, particularly large stock. Security, water access and disease remain problems, however.
- There are fewer herds large enough for sustainable beef production than before. Most herd sizes are at levels where offtake is likely to be very limited, with many people not owning any cattle at all.
- Smallstock and donkeys are a key component of all production systems, whether communal, A1 or A2.
- Livestock disease incidence has increased as result of declines in dipping frequency and efficacy in the communal areas. There is a severe lack of dipping capacity in the new resettlement areas, and the expense/availability of vaccines/drugs is hitting all livestock producers hard.
- FMD outbreaks have been significant between 2001 and 2004, although the extent and frequency of outbreaks are declining, and most are secondary outbreaks. However, there are effectively no FMD free areas today.
- The long-term trend towards more private sales has continued, with the CSC being now a very minor player in the overall sales picture, with export sales in particular being virtually non-existent, with none to the EU.

- Marketing systems are increasingly complex, involving multiple players including a growing number of intermediaries and sales destinations.
- The demand for meat remains focused on low-grade, cheap beef. Domestic demand for high quality export grade beef remains very small.
- By far the most dominant system is the small-scale, multiple use production system, typical of the communal areas and most resettlements. This involves a multi-species system, with high stocking rates aimed at maximising numbers. Cattle are critical to such systems, notably for ploughing. Donkeys can play some substitution role, but most regard cattle as key.
- Wildlife enterprises have declined, as tourist and hunting opportunities have declined. Wildlife requires extensive land areas and few new resettlement areas outside the lowveld are likely to see wildlife as an option.

Given these changes, what makes sense now in terms of practical and policy support to allow the livestock sector in Masvingo province and beyond to contribute to rural livelihoods and the national economy?

As sketched out at the beginning of this report there has been a number of different policy scenarios floated in recent years. The following sections review these in the light of the findings from the Masvingo study.

Rebuilding the beef industry – does it make sense?

The first scenario, as laid out in the National Livestock Policy Document and the DVS strategy for the 'rebuilding and redistribution of the national beef and dairy herd' focuses on regaining and enhancing commercial beef exports, with smallholders encouraged to become 'more commercialised' and be 'progressive farmers, not livestock keepers'. Rehabilitation of the Cold Storage Company as the major livestock processor and further investment in export quality abattoirs are critical to this scenario.

But is this scenario feasible in the light of the evidence for Masvingo province presented here? Commercial beef exports to the EU on the scale envisaged by some policy projections look unlikely in the foreseeable future⁵⁰. A variety of factors combine to constrain the option of the return to a large-scale, export-oriented commercial beef industry in Zimbabwe:

- The prohibitively high costs of re-entry into international (particularly European) markets, especially in respect of meeting sanitary and phytosanitary (SPS) requirements.
- Disease freedom in respect of FMD will take several years, even if no further outbreaks occur. Maintaining a disease free zone will require substantial new investment in fencing, surveillance, vaccination etc., requiring funds that are unlikely to be available.
- The current absence of any substantial commercial base to provide sufficient quality and rates off offtake for an export market. This is likely to persist as there is little likelihood that, even following restocking on the resettlement areas (A2 and A1), that the herd sizes and structures will be geared to beef production.

⁵⁰ Interview: CFU, CPA, 15 November 2006; Veterinary officer 21 November 2005.

- The costly infrastructure required to support a beef-export scenario in terms of disease control and marketing. The CSC for example is massively under capacity and runs at a loss.

A return to an export-led commercial beef strategy, as advocated in a number of policy documents, looks like a costly option. The availability of government or donor resources for supporting such an effort looks unlikely. And if available, should public support really be focused on subsidising a relatively limited group of farmers, who by virtue of their large herd sizes, could not be described as poor? Just because in the past – under the pre and post Independence regimes this was the case, it does not mean that this is appropriate today.

A more modest version of the revitalisation of the beef sector is also discussed in some circles. This involves the re-creation of a much scaled down export zone or the established of a series of registered suppliers as 'compartments' in an export system. This would involve securing disease freedom (with or without vaccination) in a relatively small geographical area or a series of farms, and accepting that the rest of the country would remain endemic. This may yet remain possible, with careful vaccination and surveillance regimes imposed and a strict traceability system developed among a small group of selected herds. This could be linked to the upgrading of a small abattoir facility to meet EU and other stringent export standards. If this was commercially viable, and the full costs of implementation were borne by the producers concerned, this may make sense. But there seems no argument that veterinary and marketing support for such a venture is of a 'public good' nature and that government or donor investments should support this.

At the regional level (Mushonga, 2006), beyond Zimbabwe's borders, an argument is made that the Zimbabwean government has a responsibility for maintaining veterinary control in line with what went before, so as not to undermine the regional commercial base for the beef industry in South Africa, Botswana and Namibia. Concerns have been raised, both publicly and privately, about the consequences of continued FMD outbreaks in Zimbabwe over the last few years. The fence line along the Botswana border and increasing border patrols have been focused on preventing cattle movement and disease spread across the border. In the same vein, South Africa has stepped up its surveillance in Limpopo province across the border following a series of FMD outbreaks in recent years. The regular movement of animals to Mozambique is also a concern, as movement across borders by both people and animals becomes a key part of livelihood survival strategies.

The official position at a regional level, supported by SADC policy and ministerial statements and backed by new investments in disease surveillance and early warning/information systems (such as the large EU funded programme, Promotion of Regional Integration in the SADC Livestock Sector [PRINT]), is that a strong disease control stance has to be taken, and Zimbabwe is a key part of this picture. The South African government in particular has added resources to the rhetoric supporting Zimbabwe in the purchase of vaccines and backing the regional FMD programme coordinated through FAO. Botswana, as major shareholder in the regional vaccine facility based in Gabarone, has also recognised the challenges in Zimbabwe and offered FMD vaccines over the past few years. But, for all regional governments such efforts are seen as intermediary measures to help get over the immediate crisis while Zimbabwe returns to an assumed pre-2000 status quo. However, given the discussion above, what if such a status quo no longer exists, cannot be achieved, or is in many senses undesirable?

It remains an open question whether such regional efforts could continue for ever. Zimbabwe may have to be treated more like Mozambique or Angola as a direct threat to the beef industries of the Botswana, Namibia and South Africa trio, one that may be increasingly expensive for their own industries, already under pressure, to offset.

Or is wildlife a better bet?

The second scenario – put forward both as an add-on or an alternative to the first in numerous plans and strategy documents – is for abandoning livestock production in the more arid regions to focus on wildlife management: fencing of the southeastern portion of the Masvingo province as a permanent veterinary red zone which would be marketed to tourists and hunters as a biosphere reserve with strategic corridors connecting conservancies (including ‘community conservancies’) to the Great Limpopo Park.

If adequate numbers of high-value quarry species can be sustained in the lowveld resettlement areas there may indeed be some scope for small-scale private hunting operations to persist and thrive in various joint-venture guises in areas bordering the game park. The extensive nature of wildlife operations will limit access to this niche to the few remaining game ranches and conservancies and relatively few, largely A2, settlers with land of sufficient size and quality to attract a hunting quota and attract and retain game. Another option would be to attempt to legalise and regulate game harvesting for biltong to retain profitability but ensure sustainability.

However, as discussed above, the wildlife management option, too, is not a feasible scenario for the vast majority of the region’s inhabitants. Wildlife management is simply not a local priority – particularly given its inherently extensive nature and the incompatibilities with agriculture and livestock production. And the tourism industry has proved itself an unstable and fickle sector with long-standing expectations (even before the instability of the last five years) of a tourism-driven economic hub in Zimbabwe’s lowveld coming to nothing.

Or is there an alternative scenario for the livestock sector?

On the basis of the findings of this study, we would argue that there is an alternative to the oft-repeated scenarios for livestock development in Zimbabwe. This has been articulated before, and has in parts been incorporated into post-Independence policy statements, but often in a rather half-hearted and inconsistent way. Rather than constructing an idealised scenario centred on outmoded and unviable models based on what went before, any alternative should emerge from the realities on the ground, and focus on revitalising the small-scale livestock sector in particular, and so supporting the livelihoods of the majority.

What might this entail? Clearly, there is huge diversity across different settings of land use and agroecology, even in Masvingo province. This requires a flexible suite of policy options, avoiding a one-size-fits-all solution. Today there is a huge diversity of production and marketing systems across the province. The old classifications of ‘communal’ and ‘commercial’, subsistence’ and ‘export-oriented’ or ‘small-scale’ and ‘large-scale’ no longer work. A rethinking of the way policies are thought about and framed is required. The agrarian reform of the last years should in this light be seen as an important opportunity to reject the colonial inheritance of dualistic thinking in policy and adopt a more forward-looking policy vision located in the dynamic and complex realities of contemporary Zimbabwe.

Emerging from study, the following themes are some of the key components of a new policy scenario for the livestock sector in Zimbabwe:

Livestock production

- Livestock, and particularly cattle, are essential to farming-based livelihoods and the boosting of the agricultural economy. Agrarian reform cannot work without livestock as a crucial pillar of the rural economy. This requires livestock policy to link livestock

with livelihoods, and cattle (and to some extent donkeys) in particular to agriculture. Separating livestock and agriculture does not make sense, and requires different sections of the Ministry of Agriculture, both in research and extension roles, to work closer together, avoiding unfortunate and artificial institutional separations which have emerged of late.

- There are different stocking rates (or economic carrying capacities) appropriate for different uses. Communal areas and A1 resettlements (and possibly A2 areas also) are likely to remain densely stocked. For a multiple use strategy, with multiple herd owners attempting to maximise herd size, this makes absolute sense. There is no point in attempting to impose a beef production system stocking rate on such areas. Different ways of dealing with stocking rates and grazing management are required, focused on preventing environmental degradation of key resources, and rehabilitating key grazing and browse sites (see below).
- The loss of breeding herds during land reform remains a concern, and on-going efforts are to be welcomed, including assessing the number of intact breeding herds, identifying the challenges of rebuilding stud herds and reinstating of registration processes under the Zimbabwe Breed Herd Book. However, given the new production priorities, the type of breeds that will be required for restocking are different. Beef breeds are less of a priority than 'indigenous' breeds, including Mashona, Tuli and Africaander. Over several decades these have been lost from the communal (and now resettlement) herd, potentially with significant consequences for production, drought resilience and disease susceptibility. Restocking efforts which enhance hardy genetic stock in line with the high stocking rate/multiple use/multi-species stocking rate must be a priority.
- Policies need to go beyond the cattle and beef focus. Other stock are also important for livelihoods, particularly for poorer people and women. A redirection of public support in both research and extension towards smallstock and other 'micro stock' makes sense, in areas of production, breeds, disease control and marketing.

Drought and fodder management

- Drought is normal in Zimbabwe, and with climate change, variability in rainfall levels is likely to increase. Building a response capacity is critical. But this must not rely on complex early warning systems or elaborate and expensive infrastructural options. Cheap, local solutions exist and can be enhanced. Appendix 2 lists a number of options. These include the need for advance planning and agreements for movement during drought (an increasingly pressing issue as land is taken up for resettlement).
- This must combine with investment in rangeland rehabilitation for drought fodder reserves, including improving the productivity of 'key resource' patches for grazing, as well as other low cost improvements in fodder availability. For example, a research programme on *phombwe* and other drought fodder plants is urgently needed; options which have greater chances of success than past failed attempts at fodder reseeding or pasture irrigation.
- Water resource development should be a high priority in areas where grazing is relatively plentiful, especially in new resettlement areas. This will require major investments in infrastructure and associated support.

Wildlife and livestock

- Whilst inappropriate for the majority of communal area and resettlement farmers hunting – and even tourism – will be an option for some A2 farmers with relatively extensive holdings close to former game ranches and Gonarezhou National Park. New policies for wildlife management could usefully support mechanisms and capacity building for strengthening the position of these actors in joint-ventures with safari and tourism companies.
- The status of Gonarezhou National Park should be reviewed to consider community tourism and hunting concessions – particularly for those communities with legitimate historic land claims – within the park.

Marketing

- The demand for meat is mostly of low grade, cheap cuts. This should be the focus of the marketing system, with appropriate investments in infrastructure, regulation etc. Gearing towards the high value end of the market is distorting and inappropriate. While beef will likely remain the meat of choice, experimental investment in other meat marketing options – of poultry, goat, sheep, rabbit – needs to be undertaken to see if new markets can be created on a sound financial basis.
- There needs to be recognition of the strength and capacity of 'informal' systems of marketing. While seemingly chaotic and unregulated, and a far cry from the linear, single channel system of the past, it does work apparently quite efficiently, certainly in comparison to the extraordinary inefficiencies of the CSC, for example. However, such systems are not facilitated; indeed are constrained by an array of outmoded regulations and attempts by local government to regulate and tax, thus constraining private entrepreneurial activity. A shift in perspective is required that encourages a new livestock marketing system to emerge which is both efficient and safe. This will require a review of existing regulations and new modalities financial/credit support.
- The new marketing system also provides a growing number of players – as intermediaries, as processors, as marketers – with new forms of livelihood. These are often not the conventional players in the meat marketing system, allowing a diversification of opportunity (from a small group of private/state-owned enterprises to a diverse range of entrepreneurs many of whom are relatively poor) and a geographical shift in location (from developed urban areas to the rural areas, communal and resettlement). This will require investment in support and training for new entrepreneurs at all levels of the commodity chain.

Disease control and veterinary services

- There is a wide recognition that conventional state delivery of veterinary services is under extreme pressure and lacks the capacity to deliver a comprehensive animal health care system, let alone national-level disease surveillance and transboundary disease control. What should a state (and donor) supported national veterinary service do? The core function analysis undertaken a while ago needs to be returned to in the light of changes to the sector that have occurred in the last few years. Serious questions need to be asked as to the funding priorities and appropriate focus, and whether, in particular, continued public support for a commercial beef production system, including vaccination, zonation, movement control and surveillance functions, makes sense (see above). This may more appropriately be a

private function, with public efforts redirected to priority areas in resettlement and communal areas, including reconsidering the level of public support for dipping.

- In the light of this, greater efforts at integrating local-level delivery systems for veterinary care and livestock issues more generally need to be explored. To date there has been a formal separation of informal local systems and state-provided services. But with state-led extension declining in capacity and coverage, local systems have in practice become crucial. This includes private delivery of drugs, vaccines and advice through stores and traders, and local level 'indigenous' animal health care practice. Yet such practitioners, who in practice are taking on the critical role of providing services to the vast mass of livestock producers in the country, are little recognised and supported. A more comprehensive and radical look at a 'community animal health worker' model, as successfully implemented particularly in East Africa, should be undertaken, together with support and training for private sector traders and others involved in the delivery of livestock related services. This will require a greater integration of now separate functions, with government taking on a support, training and regulatory role and stepping away from the old models for service delivery premised on the commercial beef model.

Priorities for public policy and investment

These themes have some major implications for national policy. Clearly, findings from Masvingo cannot be simply extrapolated across the country, just as suggestions for Gutu district will not work in the lowveld. But some of the principles highlighted above do have greater resonance, and are worthy of a more fulsome debate at a national level, where trade-offs between options are examined, and public support and private sector priorities are highlighted.

A composite vision will be required, encompassing a variety of scenarios. A focus on a pro-poor livelihood orientation for the livestock sector, as outlined above, does not mean that high-quality, export-oriented beef production enterprises will not emerge. An export zone or compartment system, based on full cost recovery, may yet prove possible, as will certain wildlife enterprises, particularly near the parks estate and in land-extensive areas of the lowveld. Some A2 farmers may find beef and dairy production a sensible option on their new farms, but probably in combination with other enterprises centred on arable production.

However, the question now is where should public (and potentially donor) support be focused? Given the pressing problems of the small-scale sector – in both communal and resettlement areas – and the fact that these constitute the vast majority of the agrarian population, the justification for focusing on sensible, appropriate investments that boost this sector makes sense. For, if land reform is to have the expected returns in terms of agriculture-led growth in the economy, ensuring that livestock contribute to this is essential. And this by-and-large does not mean focusing on commercial systems and beef production, nor does it mean substituting for wildlife, but does mean ensuring livestock (of multiple species and particularly cattle) contribute to agricultural production and wider economic growth in communal and resettlement areas. This does not mean abandoning ideas focused on revitalizing the beef industry or seeking to boost the fortunes of the wildlife hunting and tourism industry, but seeking to add another set of priorities which have to date been rather absent in discussions on the future. This requires, as outlined above, an alternative vision of the livestock sector, one that will hopefully boost production, as well as ensuring the sustainability of the many livelihoods reliant on livestock as an integrated part of an agriculturally-based system in the communal and resettlement areas.

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Appendices

Appendix 1. Checklist of questions used

i) Livestock holdings - Overall: what does the provincial livestock holding look like now? How does this differ from before?

- Total, district breakdown numbers – cattle, smallstock, donkeys (and game populations?)
- Ownership (LSC farmers, new A2, indigenous commercial, resettlement (old), fast track A1, communal)
- Breeds (indigenous, improved, exotic) etc? Changing composition in different sectors (communal, resettlement, commercial)?
- Age/species composition (changes in herd/flock structures)
- Implications of the above?

ii) Herd/flock establishment – Overall: how are herds and flocks being re-established now?

- What movements of animals have occurred to establish livestock populations on the new resettled land?
- What credit/loan/grant facilities have been created (incl Cold Storage, Heifer International etc)? And what criteria have been applied?

iii) Livestock output - Overall: What is the current pattern of output, through what marketing systems? How does this differ from before?

- Recorded offtake for sale (meat, hides/skins, milk) – from different groups (lge scale commercial, etc.. Same categories used to assess numbers)
- Sites of sale (auctions, direct sales etc..)
- From producer to transporter to slaughter to retail: changes in the structure of the market, and flows.
- Destinations of sales (CSC, commercial farmers, butchers etc...)
- Types of meat sold (beef, goat, sheep, and grades) – where has it come from; who is buying it?
- Processing – changes? Biltong, other preservation methods, canning. Changes?

iv) Disease/vet issues - Overall: How have changes in land use/ownership – and associated shifts in livestock economy – resulted in changes in livestock disease, and challenges for their control?

- Disease incidence, now and before. Changing patterns of disease
- Disease control – now and before (actual vs theoretical) – dips, fences, movement control, vaccinations
- Disease resistance/resilience of livestock populations – changes?
- Disease and implications for marketing?
- Vet supplies/delivery – private, govt, informal, traditional. Has the composition and extent of delivery changed in the last 5 years (data)?

- Changing numbers and types of service providers in the province?

Key focus: Foot and mouth disease - Overall: Given land reform, do FMD options look different (compared to the conventional model of fencing, movement control etc.)?

- FMD focus – outbreak patterns over last 10 years (details – where, when, duration control responses) – map and timeline.
- Livestock populations and resilience to FMD
- FMD and output – meat, milk – changes?
- FMD and meat markets – changes?
- Implications of endemic FMD: impacts for who?
- Control strategies planned for the future – emerging policy thinking.

v) Fodder and feed Overall: Has land reform affected patterns of access to grazing and feed resources? And if so, for whom?

- Access to grazing – implications of changing land use/ownership on grazing patterns for different groups, including communal, commercial, resettlement. Where are people getting grazing now. Is this different to before?
- Fodder/grazing markets – lease grazing, fodder sales etc. Are there changes in market relations?
- Feed and supplements – changes in demand and supply.
- Drought responses: If there was a major drought now, what would the response be wrt to grazing/livestock management, including movement? Would this be different to say 91-92?

vi) Livestock and wildlife Overall: Livestock-wildlife interactions: harmony or conflict? Is there a changing relationship between the livestock and wildlife economies after land reform?

- Overall in the province, what are the changes in areas being used for 'commercial' wildlife (meat, hunting, tourism) post land reform?
- Does the post land reform setting mean that there is now a different assessment of the value of wildlife from new stakeholders?
- Are new settlers contemplating wildlife as form of land use (beyond low level hunting), if so where, and with what in mind (game farming, tourism, commercial hunting)?
- What difference does the presence of national parks/conservancy/Greater Limpopo transboundary park idea make?

vii) System interactions Overall: How have the linkages/connections/interactions in the livestock economy changed? With what effects, and for whom?

- Markets for live animals (from where, prices)
- Markets for draft – has this changed? More or less exchange/sharing/charging?
- Sources of new animals for restocking (heifer exchanges, etc.) post-drought. Changes from the post 92 period?
- Stratification (fattening, breeding etc.) – role of different players. Are there new interactions emerging? In what ways have they changed?

Appendix 2. Conclusion: Challenges for drought contingency planning (from Scoones et al., 1998)

A number of findings emerge from the analysis of the case studies presented in this report.

- The negative impacts of drought on livestock, and particularly cattle, in the communal areas are increasing, in part because drought response options are increasingly constrained. Increasing levels of uncertainty due to climatic change will make finding ways of improving drought responses for livestock an important development imperative in the future.
- The costs of recurrent drought on the livestock sector in the communal areas are significant, and possibly rising. Because of the close links between agriculture and livestock production, the loss of draft animals is particularly significant. Such high costs carry wider social and economic implications that justify public intervention in drought planning and mitigation.
- The continued emphasis of government policy and intervention in the communal area livestock sector which focuses on cattle and beef production is misplaced, and results in inappropriate responses.
- Past and existing formal interventions have almost exclusively focused on crops, and rather ignored the livestock sector. Doubts have been raised about the effectiveness of the existing early warning systems, and the degree to which they provide accurate and timely information of sufficient quality that local responses can be based on them. Issues of trust, styles of communication and the political context of such activities has been raised (see below).
- External interventions that have occurred within the case study areas, aimed at offsetting the costs of drought for the livestock sector, have been limited. A series of case studies showed how these were often implemented late, served a relatively small number of people and were poorly targeted. They also were almost exclusively focussed on cattle, to the exclusion of other stock.
- Local responses to drought are seen to be very different from the standard externally derived approaches. A range of options focussing on *in situ* fodder management; livestock movement and marketing have been discussed. These include temporally specific coping mechanisms in response to a particular drought event, as well as longer term adaptive shifts in livestock management strategies and practices.
- A variety of factors act to constrain local responses to drought. For example, restricted access to surrounding farms or national parks reduces relief grazing; movement restrictions imposed by veterinary regulations reduces movement options; reduced remittance incomes undermines the ability to pay for external feed or herding labour and changing labour relations constrain the chances of effective herd management. By contrast, other factors have enhanced drought response capacities, including, for example, increasing social networks between communal and non-communal land users, and an increasing range of market opportunities has expanded sale and purchase options for livestock.

- Adaptive and opportunistic responses to unfolding situations characterised by great uncertainty typify local responses. This contrasts with the formal externally desired responses which are associated with forecasting, risk based prediction and planning (see Table 12). The articulation of these two approaches is currently poor. Sometimes the externally derived approach acts to upset local responses, by providing confusing information and inappropriate interventions.
- Perceptions of risk have a major influence on drought responses. These differ widely between different actors. Local constructions of risk link political, economic, religious and moral commentaries, and are deeply embedded in social and cultural understandings of drought and its causes. Risk perceptions are not factored into most externally derived early warning and drought planning approaches, as a technical forecasting and planning approach is promoted. However, local peoples risk perceptions are significant and condition attitudes to drought planning and intervention.
- The networks through which information about drought conditions and response strategies flows at the local level and the formal level barely link. Local networks are characterised by informal social connections mediated through a range of local institutions, nearly all of which do not have drought functions per se. Formal networks are associated with particular, often centralised, organisations that provide largely technical forms of information to certain users. This information rarely directly reaches the local level, although it may do through the media. Levels of trust affect the relationships within networks and the acceptance or rejection of particular forms of advice.

Table 12. Comparisons between formal and local drought early warning, planning and response

	Formal drought early warning, planning and response	Local drought early warning, planning and response
Understandings of drought	Drought event; defined meteorologically.	Drought as 'normal' and expected; defined according to both outcomes and effects.
Understandings of risk and uncertainty	Focus on risk (knowable) and attempts to make uncertainty (not known) into manageable risks; technical focus.	Focus on uncertainty (the not known); culturally embedded constructions of risk and uncertainty.
Data and information	Quantitative; technical; extrapolated; generalisable; based on predictive models.	More qualitative; based on experience and practice; reliant on 'rules of thumb'.
Communication	Reliant on formal channels of information flow, including the media; trust may be low; contribution and feedback is limited.	Dependent on existing knowledge networks and trust relations; local political and religious affiliations may be important.
Institutional and organisational arrangements	Expert institutions for early warning, planning and implementation; often centralised (nationally or provincially); irregular operation linked to drought 'event'; delinked from other networks and relations; high transaction costs; low trust	Linked to existing institutions and organisations (religious, political, social, kin-based etc.); part of regular and repeated behaviours of social and economic life; embedded in existing social networks and relationships; potentially high degrees of trust.

	levels often apparent.	
Nature of planning	Technical planning frameworks, where risk factored in through contingency arrangements.	Adaptive, incremental planning in the face of uncertainty; surprise, serendipity and rapid responses key.
Focus of response	Sectoral - livestock, agriculture, food supply; relatively inflexible projects implemented; targeted.	Livelihood focus; integrated response; flexible; inclusive.

The central issue raised by this comparison is the need to find more effective modes of articulation between formal and informal responses, built on a mutual understanding of perceptions of risk and causality, as well as a more focussed attempt to build trust around networks of communication and action across levels.

What is the most appropriate policy response to this situation? How could existing strategies for supporting livestock keepers in drought prone areas be improved? How can the broader aim of creating more sustainable livelihoods in such areas be achieved? These are, of course, not easy questions to answer.

Five different options exist for responding to risks such as drought, which suggest quite different, although certainly not mutually exclusive, avenues for policy and intervention (cf. Payne et al, 1994; Scoones, 1998). The following section therefore will explore these options for the Zimbabwean context, suggesting key areas for policy support, which emerges from this analysis.

1. Livelihood resources may be accumulated so that reserves and buffers are created for times when stresses and shocks are felt.

The livestock and land asset bases in the past used to provide exactly this sort of resource as a buffer (see section 4). However, both the number of livestock and the amount of land available to communal area populations has declined, making drought impacts severely felt. The options for gaining access to grazing reserves in times of drought is, in large part, reliant on good connections with commercial farmers and others with land nearby. This is dependent on the building of strong social networks and drawing on this social capital in times of crisis. The increasing enforcement of strict property regimes, however, makes this more difficult, as does the growth of the wildlife industry, particularly in the low veld.

A number of opportunities exist for intervention in this area, however:

- Increasing the pace of land reform, especially the acquiring of land nearby existing communal areas for expanding grazing land. This remains an urgent priority, and is fully justified given the important contribution of communal area cattle to the national economy and social welfare;
- Restocking programmes allowing herders to regain their capital base soon after drought is a key issue. However, current informal arrangements for restocking through exchange of cattle with commercial farmers may undermine the resilience of the system in the longer term through the importation of inappropriate genetic stock (see below). However, restocking with hardier breeds, and a greater emphasis on small stock and donkeys, may prove a more sustainable option.

- Facilitating reciprocal grazing arrangements between areas, through the offices of the Rural District Council, including contingency plans for such arrangements with particular chiefs/headmen, commercial (large and small-scale) farmers, and national parks.
2. *Activities associated with different aspects of livelihoods can be spread over space and time to avoid a drought affecting the whole range.*

The importance of making use of spatial and temporal differences in landscapes in the management of livestock has been emphasised at various points in earlier sections of this report. With respect to livestock production, this requires making use of different grazing resources at different times of year, and encouraging a flexible approach to herding and grazing management, based on opportunism. This approach relies on complex herding arrangements, as well as livestock exchanges and loaning to households at some distance from the owners kraal.

However, flexible, opportunistic grazing strategies contrast with many conventional approaches, such as fenced grazing schemes, which tend to constrain livestock and restrict the opportunities for spreading risks over space and time.

Livestock production must be complemented with other livelihood activities that have different spatial and temporal niches and so face different risk profiles. Thus, a diversified agricultural base with gardening, dry field farming, small stock and large stock raising encourages risk spreading. If this is combined with off-farm activities such risks are reduced yet future.

- Avoid interventions that restrict the flexibility of grazing management. Fenced grazing schemes should not be recommended, for instance, in the drier areas of the country. Equally, veterinary restrictions on movement should be kept to the absolute minimum, with the permit system revised to increase efficiency and reduce excessive transaction costs.
 - Livestock exchange and sharing arrangements should be encouraged through support from extension workers who could facilitate the building of new sharing networks between areas; identifying demand and supply; and helping livestock owners apply for movement permits, if veterinary restrictions apply.
 - A diverse agricultural and livelihood system should be encouraged, with a range of activities in different spatial and temporal niches. The present relatively limited range of extension advice, focussing particularly on dryland farming, should be extended.
3. *The mix of activities may be changed to reduce the covariance among different sources of risk.*

The mix of livestock holdings in the study areas is certainly changing, and this is in part a response to the effects of recurrent drought. Cattle are increasingly being seen as a high risk option, and people tend to aim for relatively smaller herds that may be managed intensively, while adding to their livestock holdings through the purchase of more drought resistant goats and donkeys. While all livestock are affected by drought, as the data presented in section 2 shows, there are some major differences. Goats and donkeys are only affected by extreme fodder shortages and, in minor droughts, goats appear to thrive due to reduced water-borne parasite and disease incidence. While covariant risks are not reduced completely by this strategy, such a shift in livestock holdings has a risk reducing effect.

This is enhanced, of course, by extending livelihood activities into areas that are not rainfall dependent. The ranges of off-farm activities are important elements of livelihood diversification that result in risk reduction. Such activities have always been part of rural livelihoods in the study areas, but the range of such activities does seem to be on the increase, and this is particularly apparent during droughts (see Scoones et al, 1996 for details from Chivi during 1991-92).

A number of intervention options arise, therefore:

- Research and extension support and advice is required for those wishing to change the mix of livestock holdings, and indeed change the management strategies for existing stock. Currently, relatively little R and E support is invested in goats and, particularly, donkeys, despite their increasing importance.
- Again, the encouragement of off farm livelihood diversification is a key strategy for supporting livelihoods in dryland, drought prone areas. Yet, due to the focus on agricultural (and mostly crop-based) extension, such issues get relatively little attention in rural extension support from government.

4. Risk pooling options may be employed through various forms of insurance.

Insurance mechanisms for both agriculture, and particularly livestock, has not been a great success. Publicly provided insurance has been reliant on subsidies and been plagued by moral hazard problems, administrative burdens and political interference (Hazell, 1998). In dry areas, the frequency of drought events is usually too high to make insurance affordable. For livestock, the various problems more generically associated with insurance approaches are even larger, because of the mobility of animals, the difficulty of inspection and assessment. Insurance approaches, when they do operate, usually exclude the poor because of the high premium costs, unless major government interventions are applied (Hazell et al, 1986).

Some suggest that area based rainfall insurance is a way out of this bind, whereby contracts are written against specific rainfall outcomes at a local weather station, and insurance is sold in standard units in advance of any season-specific information on risks. Hazell (1998) argues that such a system avoids many of the moral hazard and administrative problems of conventional crop or livestock based insurance schemes, and that it can be sold to anyone in divisible units that are easy to market.

None of these options have been tried in the Zimbabwe context, and it is unlikely that a private insurer would develop such a system alone. However, the feasibility of area-based rainfall insurance might be worth investigating.

5. The overall resilience of the system may be enhanced such that the impacts of stresses and shocks are less dramatically felt.

Earlier sections have suggested that the resilience of the livestock production system (particularly associated with cattle) has decreased over time. A number of factors have been identified which contribute to this. For example, less land area for relief grazing; decreasing woodland areas and indigenous trees for drought feed; and increasing susceptibility to drought and poorer drought recovery of exotic breeds now mixed with indigenous genetic stock, among (many) others. The challenge will be to find mechanisms by which such resilience factors are enhanced and new ones found. Such drought-proofing interventions are therefore key, and might include:

- Increasing the pace of land reform, and encouraging relief grazing arrangements with neighbouring areas (see above).
- Investing in woodland management approaches that see trees as important sources of fodder. This suggests changes in the tree selection, planting and management approaches to current approaches which tend to favour trees for timber, poles or woodfuel.
- Exploring the potential and sustainable management of new drought feed sources discovered by livestock keepers in recent droughts (see section 4 for examples).
- Paying attention to the changes in genetic stock of livestock herds (particularly cattle) in the communal areas, including the potential of introducing bulls of indigenous origin to improve the genetic stock of cattle in such areas.
- Encouraging drought resistant crop varieties with plentiful stover production, so that during drought crops residues, if not grain will be available for livestock consumption.

All these options need to be pursued in parallel. There is no one way to reduce risk and different people will prefer different options, depending on their situation. But, no matter how much early warning information is supplied or what ingenious responses are developed to respond, such risks will never be eliminated. We must not be seduced by the prospects of prediction and precise planning, as this may undermine the flexibility of current strategies. The best approach is to be prepared for a range of possible eventualities, and be able to respond flexibly and in a timely manner to the situation as it arises. Uncertainty and surprise will always be evident, and so the type of adaptive, incremental responses that characterise what livestock keepers do is possibly the most appropriate mechanism of all. The real dangers come if such uncertainties are ignored and flexibility is reduced.