



The Effects of HIV/AIDS on Agricultural Production Systems in Zambia: A Restudy 1993-2005

Analytical Report

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Abstract

This analytical report is the outcome of a restudy that was undertaken in January 2005 of an original study undertaken in 1993 of the impact of HIV/AIDS on agricultural production systems and livelihoods in the Mpongwe area of the Copperbelt Province and the Teta area of Serenje District in the Central Province in Zambia. The study has used a 'cluster analysis' methodology that allows individuals and households to be seen in context, and in its remapping of the clusters originally surveyed has allowed surprising insights into the dynamics of social change to be developed. There are significant contrasts between the two study sites. In Mpongwe, a major maize production centre near the Copperbelt markets, maize production, dependent on agricultural inputs, has become the dominant production activities and fuelled a growing inequality between those successful in securing access to the necessary inputs, including draft power, and those who cannot. By contrast, in the Teta area, market liberalisation has deprived the area of access to inputs, and in this system maize production has declined, and the farming systems now consists of diverse food crops, not dependent on external inputs.

HIV/AIDS has had a greater impact on livelihoods in the Mpongwe area, where it is now a full fledged epidemic with numbers of people having died who contracted the disease locally. In Teta, the disease has remained more peripheral, though people, largely with external contacts have died. Whilst undoubtedly exacerbating vulnerability and food insecurity, the effects of the disease are not straightforward, and not as severe as might have been imagined. Surprising resilience has been displayed within the context of the predominantly matrilineal social system in both areas, even if life will remain uncertain for most, for the foreseeable future. Factors such as livestock disease are also responsible for this uncertainty, however, and paid less attention. If there are central messages, they are that broad strategies for HIV prevention, or for health treatment, or for social protection and safety nets, are not appropriate if not modified to take into account different cultural contexts, rural and urban.

Preface and Acknowledgements

The production of this report has been a strange affair, a surprisingly moving odyssey into the thirteen year history of a collection of families in two communities in the Mpongwe area, now a district in its own right of the Copperbelt Province, and the Teta area of Serenje District, Central Province. We believe that in its nature, as a restudy of a thirteen year old largely qualitative study investigating the impact of HIV and AIDS on livelihoods and social systems, this survey has been unique. The subject of AIDS is an emotional one in Zambia. There are few extended families in the country that have not been affected by the disease in one way or another. It has caused a great many deaths, challenged and changed lives in fundamental ways. AIDS has however been predominantly an urban epidemic, with its precursor, the HIV virus, spread along the pathways of the nation's major transport routes. Consequently, its urban impact is better known and understood.

This study is a follow up of an originally survey conducted in 1993. That study was part of a three country study, the other two being Uganda and Tanzania, conceived by Prof Tony Barnett, then of the University of East Anglia, and now of the London School of Economics, and funded by the Food and Agricultural Organisation (FAO). The two lead researchers of the original study have both been able to participate in this restudy, as were a total of 6 members of the original field teams. In addition, another two members of the Mpongwe field team were stationed there at the time of the original study, and participated in associated kinds of participatory farming systems research studies.

In the original study 34 'clusters' or family units were included in the Mpongwe survey and 18 in Teta. All of the clusters save one in Teta were refound in the follow up study. There was a great deal of surprise and interest from those who had participated in the original study, as well as some astonishment as to the information about their and their families' lives that was being brought back to them. For the most part it clearly made people feel special, and the response to one question on confidentiality, 'well if you don't use our names how will you find us again in another ten years?', summed up much of this feeling. It is an interesting reflection on the study that although the findings showed that for the most part people continue to struggle to survive as much if not more than they were in 1993, the impression provided in this analysis is more positive than negative. This is because of the resilience that people displayed.

In addition, those members of the field research teams that had been part of the original team also brought a special commitment to the study. There are several who need singling out. Simon Tunkanya played an invaluable role in visiting both sites ahead of the research, and together with John Siame of CARE Zambia, found members of the original field teams, worked with them to locate some of the original case study farmers in the field, and recruited additional local participants in the field teams. Simon then participated in both the field research exercises, to become the only person who has in fact worked in both sites for both the original and restudy. In Mpongwe, Michael Lusambo was indefatigable in his organisational and logistics support and in his commitment to participation in the study. His sustained enthusiasm provided motivation to the research team throughout of the value of the work. With regard to Serenje, Patrick Muleba, John Mhango, Moffat Lizazi, and Joseph Zgambo were all members of the original and restudy exercises. Altogether 28 people participated in the fieldwork of the 2005 study. To all of them, for their motivation and commitment of long hours and energy to the research exercise, a great deal of thanks is due.

There are others who have also contributed in various ways to ensuring the study could be conducted successfully. A great many organisations contributed to the funding. The idea for the work was first submitted to the RENEWAL initiative of the International Food Policy Research Institute (IFPRI) in Washington, and it was the approval of RENEWAL that meant

it was possible to initiate the research. From IFPRI, Stuart Gillespie warrants our thanks for his support for the restudy, right from the time it was first mentioned to him as an idea, through to the completion of this analytical report. Since the process has not been straightforward, Stuart has our gratitude for staying with the project and the three of us as the lead researchers throughout. The second organisation that has contributed considerably to the funding and support of the research restudy is CARE International. CARE Zambia contributed logistical support, staff, and to costs, whilst both CARE UK, through its DFID funded Programme Partnership Agreement in Zambia, and CARE USA, through the HIV/AIDS unit in Atlanta, also made funding commitments. With the bulk of the non-local members of the research team being provided through CARE Zambia, we would also like to thank Brenda Cupper, then Country Director, and Nancy Drost, Director of the Organisational Learning and Development Unit for their support. All three lead researchers were supported in their salary and some costs through their employee organisations, Michael Drinkwater through CARE USA, Margaret McEwan through FAO and Fiona Samuels, the International HIV/AIDS Alliance. The Swedish International Development Agency in Lusaka also provided financial support, and finally, since moving to the Overseas Development Institute in January, they have supported Fiona Samuels costs in the final development of this analytical report.

In addition to this financial and logistical support, the Government of Zambia also provided full support to the study, from within the Ministry of Health, the Ministry of Agriculture and Cooperatives, and the Provincial Secretariats in the Copperbelt and Central Provinces. The many staff from district government agencies who participated in the restudy, as they had in the original, were instrumental in its success, not least for their local knowledge and their ability to track down the original cluster case studies and to organise the field work.

Whilst the writing of this report has remained a challenge for all of us given far too filled schedules – resulting in one of the base field reports being completed whilst the lead author was rounding Tierra del Fuego – we would like to acknowledge too all those that have contributed to the various stages of the analytical writing. Jay Buensuceso and Doris Chirwa contributed hugely to the health analyses, Catherine Pongolani led a team that included Liberty Habeenzu and Flo Munatamba in the agricultural analysis, whilst Helen Chirwa assisted with the gender analysis. All these staff were then members of CARE Zambia, and represented wonderfully the commitment there has been over the last decade in the office to the development and practice of methodologies that work with people in highly interactive ways.

If these have been the individuals and agencies who have ensured that the restudy could take place, throughout the Mpongwe restudy there was absent one notable presence from the original study, a person who in his special acumen for field research and interpersonal communication had contributed a great deal to the evolution of the cluster research methodology. Thus we hope this study will continue to keep alive the memory of the many in Zambia who have had their lives tragically curtailed by this dreadful epidemic, including Harold Simuziya, who himself succumbed to AIDS not long after the completion of the 1993 study.

Abbreviations

ARPT	Adaptive Research Planning Team
ART	Anti Retroviral Therapy
ARVs	Anti Retrovirals
ASIP	Agriculture Sector Investment Programme
ASOs	AIDS service organisations
CBO	Community Based Organisation
CDI	Community Driven Initiative
CHWs	Community Health Workers
COD	Cause of Death
CRAIDS	Community Response to HIV/AIDS
DACO	District Agricultural Coordinating Officer
DATF	District HIV/AIDS Task Forces
DC	District Commissioner
DHMT	District Health Management Teams
DP	Dependant Producer
FAO	Food and Agriculture Organisation
FBO	Faith Based Organisation
FHH	Female Headed Households
FRA	Food Reserve Agency
FSP	fertilizer support program
Has	Hectares
HBC	Home Based Care
HH	Households
IE	Income Earner
IFPRI	International Food Policy Research Institute
IGAs	Income Generating Activities
MACO	Ministry of Agriculture and Cooperatives
MMD	Movement for Multi-Party Democracy
NGOCC	Non-Governmental Organisation Coordinating Committee
NHC	Neighbourhood Health Committee
OVC	Orphans and Vulnerable Children
PAM	Programme Against Malnutrition
PLWHA	People Living With HIV/AIDS
PP	Primary Producer
PRSP	Poverty Reduction Strategy Paper
RHC	Rural Health Centre
SAP	Structural Adjustment Programme
SF	Single Female
SFDP	Single Female Dependent Producer
SP	Secondary Producer
SSF	Small Scale Farmers
STD	Sexually Transmitted Diseases
STI	Sexually Transmitted Infections
TB	Tuberculosis

TBA	Traditional Birth Attendants
UNIP	United National Independence Party
UNV	United Nations Volunteer
ZCCM	Zambia Consolidated Copper Mines

Mpongwe Field Team

Name	Organisation	Responsibility	Contact Details
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Box 1

'Among the Bemba it is rare for any individual to housekeep alone. Several households are grouped round one granary and even one kitchen, and are linked by close economic ties with a wider circle of relative in the same village, with whom they constantly eat in common and on occasion pool supplies.... Besides this regular unit of consumption each household is connected by bonds of sentiment and legal identification with relatives in other villages, 20, 50, or even as much as 100 miles away. In fact, these kinship obligations result in quite a considerable distribution of food.'

Richards, Audrey, 1939, quoted in, Moore, Henrietta, and Vaughan, Megan, 1994.

Executive Summary

HIV/AIDS, following its spread along the major transport routes in the country, and from urban areas into the country side, has had a major impact on lives in Zambia for 20 years. In 1993, a study on the impact of HIV/AIDS on agricultural production systems was conducted in the Mpongwe area of the then Ndola Rural District, Copperbelt Province, and the Teta area of Serenje District, Central Province. This study, one of the first of its kind to be conducted, was carried out under the auspices of the Adaptive Research Planning Team (ARPT), Research Branch, Ministry of Agriculture, with funding from the UN Food and Agricultural Organisation (FAO). The 2005 restudy, which involved the same two lead researchers as the original study, was instigated through CARE International with initial funding from the RENEWAL initiative of the International Food Policy Research Institute (IFPRI) in Washington. Subsequent co-financing for the research effort has been carried out by CARE, through the partnership agreement with DFID (CARE-DFID PPA), CARE UK, CARE USA, CARE Zambia, International HIV/AIDS Alliance, the Swedish Embassy in Zambia, FAO, and ODI.

The overall intention of the restudy was to answer two key questions:

- What have been the effects of HIV/AIDS on agricultural production systems since the advent of the pandemic?
- How have communities and households adapted to the effects of the pandemic?

More specific objectives are:

- To investigate the nature of the increase in the impact of HIV/AIDS in the two communities over the past decade.
- To analyse the effects of the epidemic on rural livelihoods, and the kinds of adaptations that have occurred.
- To analyse the effects of the epidemic on processes of social change and patterns of vulnerability, particularly with respect to women and children. This would include an analysis of changes in local power structures and relationships, as well as changes, for better or worse, in the status of human rights.
- To use an appreciative enquiry perspective to identify the kinds of trends and changes that are occurring which we would be build upon to improve the resilience of coping strategies at household and community level.
- To explore further the utility of the cluster analysis methodology, as an approach that allows overlapping social relationships to be understood more easily.

The methodology used in the restudy replicated to the extent possible that used in the original 1993 study in order to allow for comparisons. The innovative element of the original study was its use of the 'cluster' as the unit of analysis. Since households rarely exist as discrete social and economic units, a methodology was used which allowed the overlapping connections between households to be seen much more clearly, as well as the different roles and positions of all individuals within the cluster. Relationships between individuals of different generations, gender, marital and kinship status can be understood. In the restudy, the way in which this allowed the history of the clusters to be tracked, including the histories

of all individuals that had been present in 1993, has made possible a depth of analysis of social change which the editorial team is fully aware is only initiated in this report.

Practically, the study's approach was to determine the major trends in livelihoods over the preceding twelve years; identify the factors or 'drivers' influencing those trends, and then the role and contribution of the HIV/AIDS epidemic to the changes that had happened. The starting point of the methodology was to understand the broad context of livelihood trends at the macro and meso levels over the preceding twelve years, through an introductory set of activities. As the fieldwork continued, there was a closer focus on changes at the cluster and household level, and a refinement of the research questions towards an understanding of the specific role of AIDS related mortality and morbidity on livelihoods and agricultural systems. The final phase of the methodology involved focus group discussions to validate and deepen understanding around key themes.

Overall, each cluster from the original study was tracked and mapped, resulting in 35 clusters with a total of 165 households being mapped in Mpongwe, and 19 clusters with 53 households in Teta. This cluster remapping included all those persons who were part of the cluster in 2005, and those who had been present in 1993, thus allowing the reasons to be identified for changes in the nature of the cluster and its composition. In this tracking of often quite substantial household change, perhaps most critical were the insights the methodology provided into how people are attempting to deal with the shocks and stresses that have affected them, and the diverse ways in which the resiliency of the matrilineal social system of the Bemba is being tested. In part our analysis aims to explain why the matrilineal system persists, despite its imperfect nature, and why it is not possible to understand the social nature of vulnerability and resilience without an analysis that goes beyond the household level.

In Zambia as a whole, while macro level poverty data has shown an apparent overall reduction in the proportion of the rural Zambian population below the poverty line, in essence this masks increasing disparities. What was most noteworthy from the study was the heightened socio-economic differentiation within the Mpongwe area, where the better off clusters with effective access to maize input and output markets, had yields that were higher than in 1993, but for those without such market access and who were more food insecure, yields were stagnant or falling. In Teta, the process of maize liberalization had left all farmers without market access, and thus although inequality within Teta was less marked than Mpongwe, the better off farmers in Teta had distinctly less assets and income than those in Mpongwe.

The impact of AIDS in the two study areas has been very different. The Mpongwe area, close to the Copperbelt urban centres, and now a major district market centre in its own right, has been a full fledged impact site since the late 1990s. This means that considerable numbers of people who have contracted the disease locally have now also succumbed to it, completing the cycle of AIDS becoming a local epidemic. In contrast, in the more remote Teta area, AIDS remains a more peripheral disease. This is not to deny that the epidemic has had impact, since there have been deaths largely associated with migrating members of

the community. But there remains limited evidence that the disease is being contracted and spread within the Teta area itself.

In Mpongwe, of the 123 mortalities recorded amongst the 35 clusters, it is estimated that 52 deaths (42%) are likely AIDS related, including the deaths of 13 children. Altogether 18 of the 35 clusters were affected by AIDS related mortalities. However, of these mortalities it is noteworthy that only two sets of primary producers within clusters died of AIDS, whilst comparatively a greater number of AIDS related deaths occurred in secondary producer households, 21 of 49 deaths (43%) and in other households, 24 of 38 deaths (63%). These figures do show the inverse relationship of mortality, and particular AIDS related mortality to production and food security status, as well as the fact that it is healthier households that will 'succeed' as primary producers.

For Teta, 14 of the 19 clusters experienced deaths in the period 1993-2005. There were probably 10 AIDS related deaths since 1993, of which in the primary producer households in each cluster, only one wife was affected. In terms of the average number of AIDS deaths per cluster, in Serenje it is 0.72, compared with 1.5 for Mpongwe. Mpongwe has a larger population than Teta, one reason why the sample there is the larger of the two, but this means that not only are there more potential AIDS related deaths in Mpongwe in terms of real numbers, but also on average per cluster.

It is evident from both field sites that AIDS is now a known disease: many people have seen it and have been affected by it. This is in contrast to the 1993 study where it was only starting to trickle into the consciousness of the inhabitants of Mpongwe and Teta. In terms of its impact, the young woman's focus group discussion in Mpongwe provides a useful overview: 'AIDS reduces household members, gives extra responsibilities due to nursing, it increases poverty, and it increases vulnerability on the entire household as resources become over stretched, the number of orphans increase and it is difficult to look after orphans as they expect special care'. Thus production goes down as there are less people producing - even if the patient is still farming, he is weakened so his output is less - and more time is spent on nursing and caring for the patient. The number of orphans increases and this places other burdens on already stretched clusters and households.

Overall, factors affecting the vulnerability and resilience of a household to the impacts of a death on livelihood and food security included: length and degree of incapacity during AIDS related illness; health status of surviving partner/spouse; number of dependents left; characteristics of the primary producer (age, gender, stage in household development cycle); overall cluster composition (e.g. number of female headed households and dependent producers); livelihood and agricultural production opportunities.

However, despite much broader knowledge about AIDS, the link between AIDS and HIV remains misunderstood. People see AIDS but they do not understand how it results from the HIV virus. At least in part because of this, knowledge and information is still far from effecting behaviour change. The latter is particularly evident in both sites around sexual practices and preferences.

With regard to the impact on livelihoods, Mpongwe is a key maize production area for the Copperbelt, with commercial farmers located around and now within the smallholder farming area. A single milling company provides marketing services for Mpongwe, but buys mainly maize and some groundnuts, symptomatic of the strong, single crop focus. The conversion of the farming area into essentially a maize cultivation area had begun before 1993, but has noticeably accelerated since then. Both men and women linked maize with modernity. Even the older women in their focus group discussion in Mpongwe, describing how a crop like sorghum is dying out because of changing trends, stated that sorghum 'makes people *ichungwa*' – a fool, even though it remains cheaper to grow than maize since it does not require fertilizer. In full contrast, however, the change that has undergone in Teta over the last decade is the reverse. There is less maize in the farming system, not more, and the reason is the reduced access to seed and fertilizer inputs the area now experiences. Instead, cassava production has increased, as has also the production of a crop like sweet potatoes. Overall the farming system remains diversified and focused on low input cultivation, with indigenous forms of composting being important.

In Mpongwe, the two major effects on livelihoods since 1993 are the increased mortality levels of both people and livestock. Livestock were hit by 'denkete' (corridor disease), an epidemic of which in 1996 especially decimated cattle levels in the area. Since 1993, the diversity of the food production system has also decreased. Whilst all clusters have been affected by loss of oxen and changes in the maize input and marketing system, some clusters types have been more vulnerable to the impacts of these changes than others, particularly with regard to their inability to access draft power or sufficient labour. And in some, HIV morbidity and AIDS mortality has definitely played a role, through the absorption of assets, including food stocks (to feed the enlarged number of dependents), and the loss of labour.

One of the most optimistic findings of the restudy, in terms of understanding how families attempt to rebuild food security and maintain resilience, even in the face of the adversity that AIDS and corridor disease has brought, is the way in which active efforts are made to manage generational change and succession. One facet of the flexibility of the matrilineal system is in that land inheritance – and hence primary producer succession – can lie in sons taking over land and assets from their fathers. In Mpongwe, in 6 of 16 cases of primary producer succession (in the 35 clusters), sons (and one grandson) had taken over from primary producers, and in all cases their cluster status had improved or stayed the same. In the other ten cases, where the successor primary producer has not been a son (e.g. it could be a widow or a daughter), there has often been a decline in the cluster status.

Accounts on matriliney in Zambia and other parts of Southern Africa, have long predicted that in the face of urbanisation, commoditisation and monetisation, matriliney would ultimately disappear, producing more patrilineal type family forms. Since the early 1990s, however, more recent research has shown how these forms could persist side by side and that in fact matriliney was particularly resistant and resilient to economic change. These findings are corroborated by this research. Not only does the restudy show matriliney to be resilient to economic change, but its inherent adaptability and flexibility enables it to accommodate deaths and changing circumstances associated with death. In particular, findings from this

study show how individuals, families and clusters are able to realign themselves, following matrilineal principles, in accommodation of deaths and the ensuing burdens it brings.

Two aspects of matrilineal systems emerge from the research as being key to understanding processes at work in communities: these are the flexibility and choice regarding residence locations and the relative fragility of the marital bond. These interlinked features are central to understanding the nature of resilience and vulnerability, with each both causing and being a result of the other. The potential for choice, flexibility and optation is built particularly into men's residential decision making, with a key factor being where an individual expects his livelihood to be more stable and sustainable. In both study sites, partly as a result of the fact that male labour is in high demand, there is easy mobility and choice of residential location for men: they can choose between in-laws, own parents and independence.

From this, sequential marriages or relationships are often the visible effect of flexibility in residential patterns. These often involve men at the early stages of married life where they have less obligations and more freedom to move between different locations. Even if they do have children, they may feel that they are not valued by other members of the cluster as they are seen as outsiders, are not afforded respect and are 'used' just for their labour power. Often these men may continue to work on other cluster members' fields, never ultimately owning the product of their labours. These former were views expressed by the young men during the focus group discussions; women, on the other hand, spoke about their husbands as being lazy, drinking, not being responsible nor interested in investing properly in the land, always looking for ways of making a 'quick buck'. The latter was especially the case in Mpongwe where off farm income generating opportunities in the form of piece work was available in the near by commercial farms. Nevertheless, by choice too, older, married men may choose to relocate back to their in-laws village in order to play a food security role there, as was evidenced in one of the Teta case studies.

These processes of fission and fusion are endemic to any situation in which groups of relatives reside together on the basis of kinship. Often fissioning occurs as a result of tension, power struggles, but now also due to the inability of a cluster to survive because of increases in illness and deaths of its members. What is causing growing social tension now in areas such as Mpongwe, is the increasing inequality of clusters due to, for instance, differential access to subsidised inputs, and the ambition of those who wish to become 'modern' farmers. These processes have affected usual expectations around sharing, distribution and the role of families and clusters. This issue was aptly expressed by older women in the Mpongwe focus group discussion: 'The notion of sharing is dying away because the wealthier ones in the family cycles are distancing themselves away from the poorer ones, as the poor cannot give back. This has led to families disintegrating'.

One can argue, however, that the processes already existing within the matrilineal system regarding the fragility of the marriage bonds, and the ability of men to 'get-up-and-go' and marry again has in fact assisted with livelihood systems adapting to death and illness, especially in cases where HIV/AIDS has potentially devastating effects on individuals, families and clusters' ability to adapt and survive. Once a spouse dies, the widow or widower

can easily become absorbed into another cluster not only by drawing on kinship ties but also through marriage.

Like many aspects of our analysis, the precise nature of women's vulnerability was not easily tied down and by no means as simple saying that a divorced woman, with children that included orphans, was automatically amongst the most vulnerable households. Certainly, she would rarely be food secure in her own right, but she may not be insecure either, if she lived in the village of her father or a brother, who had assets and whose own production was secure.

In the context of the focus group discussions at the end of the fieldwork, women split themselves into three categories: the matriarchs, who formed the cluster group of older women; their daughters who are middle aged, and in turn may be having daughters who might potentially be married with young children, and then the young, newly married, or newly with child, women. These latter two groups met together as the younger women's focus group, though they have definite distinctions of status.

Since women carry the burden for home health care, and for feeding orphaned children, AIDS related deaths has made them more vulnerable. But at this stage our analysis has only begun to open up the kinds of questions an exploration of which is required for a greater understanding of gender inequity. In the higher relative status that women have, and its diverse social protection mechanisms, the matrilineal system, with its social and locational options, has benefits for women that are one of the main reasons matrilineal kinship persists.

In summation, some of the main factors emerging from the research restudy include:

- Vulnerability, in terms of gender, age and social economic status, can only be understood clearly in the context of cluster relationships (e.g. healthy dual headed families can be more vulnerable than a FHH with orphans), and targeting should be of resource poor clusters rather than at HH level.
- Whilst national food security has focused on maize intensification, crop diversification remains important for HH food and nutritional security – but requires emphasis on retention of local knowledge (being utilised in Teta but lost in Mpongwe), as well as appropriate policy support.
- Diversification within and without agriculture contributes also to greater flexibility and resilience in its need for different types of labour at different times (farming systems can be adjusted more easily depending on when resources are available).
- The potential tragedy of further outbreaks of unchecked livestock disease remain inadequately addressed.

With regard to health, a critical influencing factor is that belief systems are deeply embedded in the culture and community, and these are affecting health seeking behaviour and outcomes, such as sexual cleansing and witchcraft.

- Protection messages around 'happy couple', are mostly seen only as promoting promiscuity and are not appropriate for the cultural context. They do not deal with issues related to culture and witchcraft, nor the practical issues and decisions facing men and women about sexual intercourse.
- Education around HIV/AIDS is not being translated into practice because of lack of understanding; people understand the signs and symptoms of AIDS, but do not fully appreciate how it results from the HIV virus; the silence of HIV is not understood, and inadequately addressed in prevention campaigns.
- Ongoing stigma takes place largely because AIDS is known only to end in death. The presence of ARVs, if available reliably, could make a sizeable difference – 'if there is treatment, people's attitude towards patients would change'.
- Targeting the vulnerable: still needs a broad based definition of vulnerability, not just AIDS related (e.g. not all orphans are vulnerable, and not all vulnerable children are orphans).
- Changing behaviour requires changing the way people see themselves, their own concepts of identity. Sexual practices can change – condom usage is discussed now, whereas was rejected previously – but better information is required as a basis for local discussion.

The need for systematic transmission of intergenerational knowledge could be met through ensuring that:

- The role of older women (aunts, grandmothers) as the channel for transmitting cultural norms about sex and sexuality is understood so that appropriate messages on HIV prevention are discussed with and channelled through them and not parents.
- Content of messages: separate AIDS which people know and acknowledge, from HIV which is 'silent'.
- Cultural beliefs are better understood around the linkages between human sexuality and fertility, the well-being of kin and family, and the well-being of production systems. Fear of the dead spouse's ghost (going mad, and misfortune on one's family) is greater than fear of contracting HIV (which is 'silent'). Thus people fear AIDS, because they can see it, but not HIV.

Most of all the validation of the use of the cluster methodology in the restudy – by farmers and the research team alike - suggests there is much to be gained by exploring how it can be used in wider, future research as well as programmatic interventions. The methodology provided far reaching insights into the nature of social change, and at its most fundamental, the duree of life of all those in the clusters as they struggle, some with more, some with less success, to survive. Whilst the resilience of social networks was one of the main lessons from the restudy, it remains clear that even for better off farmers, they will continue to experience the tensions of extended family networks that have been put under increasing strain by AIDS, by livestock disease and by changes in the economic and policy environment. Over the next decade, people will continue to live uncertain lives.

The Effects of HIV/AIDS on Agricultural Production Systems in Zambia:

A Restudy 1993-2005

1 Introduction

HIV/AIDS has had a major impact in Zambia for over 20 years. Estimates of the national HIV prevalence have been between 19% and 16% with the lower figure being the most recent estimate. Prevalence rates have been lower among the rural population, but because of the nature of the pandemic, the social and economic effects of the disease have been borne by rural and urban populations alike. With such a high national prevalence rate, mortality has been high especially amongst the economically active adult population, with serious, adverse consequences for Zambia's economic and social future. Understanding the nature of the impact of such a complex pandemic is elusive as there are both immediate and long wave effects which are accumulative and systemic.

Within the context of rural livelihoods, the social fabric of the extended family has been stretched and pummelled to the limits of its resilience. There is need for a more detailed analysis of the impact of the pandemic on people's livelihoods, focusing on the changes that have occurred and ways in which people have attempted to cope with and manage the effects, recognising that this is just one source of vulnerability in their lives. This information is critical for support to the rural communities that is based on the people's reaction, realities and innovative ways of coping with the effects of the pandemic. It would provide more reliable information that NGOs, Government and other interested institutions can use to more effectively respond to the effects of the pandemic.

The uniqueness of the 2005 study lies in its being a restudy of one originally undertaken in 1993 under the auspices of the Adaptive Research Planning Team (ARPT), Research Branch, Ministry of Agriculture, with funding from the UN Food and Agricultural Organisation (FAO), and under the overall coordination of Prof Tony Barnett.¹ The 2005 restudy was instigated through CARE International with initial funding from the RENEWAL initiative of the International Food Policy Research Institute (IFPRI) in Washington. Subsequent co-financing for the research effort has been carried out by CARE, through the partnership agreement with DFID (CARE-DFID PPA), CARE UK, CARE USA, CARE Zambia, International HIV/AIDS Alliance, the Swedish Embassy in Zambia, and FAO TCEO (OSRO/RAF/403/SAF).

The core team that carried out the research included several members who had been part of the 1993 study team: Dr Michael Drinkwater, (now a Senior Program Advisor with CARE International), Dr. Fiona Samuels (Senior Programme Officer for International HIV/AIDS Alliance during the study, now with the Overseas Development Institute), Simon Tunkanya (now an independent consultant). In addition, Margaret McEwan, now with the FAO, joined the team as the lead consultant for the Teta exercise. When the initial inception visits were made to the two field sites, Mpongwe in the new Mpongwe District, Copperbelt Province, and Teta in the Serenje District, Central Province, the team was also delighted to find that

¹ 'The Effects of HIV/AIDS on Agricultural Production Systems in Zambia', Michael Drinkwater (ed), FAO, 1993.

several members of the original survey teams in both locations were not only still present but enthusiastic to participate in the restudy. In particular, Mike Lusambo, the Acting District Senior Agricultural Officer, from the District Agricultural Coordinating Office, took on the central role of organizing a local team for the Mpongwe fieldwork. In addition to the above, other team members who participated in the research came from CARE Zambia, the District Agricultural Coordinating Offices in Mpongwe and Serenje, Mpongwe Mission Hospital, Serenje District Hospital, the District Health Management Teams (DHMT) in Mpongwe and Serenje, the Mpongwe District Education Office, and the District HIV/AIDS Task Forces (DATF) in both locations, and the Kabamba Rural Health Centre, Serenje.

2 Objectives of the Restudy

The overall intention of the study was to answer two key questions:

- What have been the effects of HIV/AIDS on agricultural production systems since the advent of the pandemic?
- How have communities and households adapted to the effects of the pandemic?

More specific objectives are:

- To investigate the nature of the increase in the impact of HIV/AIDS in the two communities over the past decade.
- To analyse the effects of the epidemic on rural livelihoods, and the kinds of adaptations that have occurred.
- To analyse the effects of the epidemic on processes of social change and patterns of vulnerability, particularly with respect to women and children. This would include an analysis of changes in local power structures and relationships, as well as changes, for better or worse, in the status of human rights.
- To use an appreciative enquiry perspective to identify the kinds of trends and changes that are occurring which we would be build upon to improve the resilience of coping strategies at household and community level.
- To explore further the utility of the cluster analysis methodology, as an approach that allows overlapping social relationships to be understood more easily.

The first three objectives relate to understanding the effects and impact of the pandemic, whilst the second two are about refining methodologies that can provide a better understanding of the changes that have occurred and the community response to these. They also seek to provide a basis for mitigation strategies that could be developed through a participatory process. One limitation of the original study was its subsequent use in programming, though in Mpongwe, findings were incorporated in subsequent work of the EU funded Smallholder Development Project, that had provided support to the study. For this study, the research team has involved CARE Zambia, the government, the International HIV/AIDS alliance and local partners from the outset to think about mechanisms for how the findings can be used programmatically. The report itself will lead into further dissemination work in Zambia, perhaps most of all it is hoped that this research will fuel some serious rethinking about two subjects. One is HIV/AIDS campaigns in rural areas, in particular the

nature of prevention campaigns, since whilst this study has focused on effects, it has clearly pointed out some enormous weaknesses in the lack of cultural attention given to current prevention messages. And second is the kinds of focus and targeting of mitigation and social protection campaigns. The study helped reiterate the complex nature of not only vulnerability, but also the forms of adaptation within local social systems. Very often households that fail to participate in subsidy programs because they lack the financial means, but also do not qualify for social protection, as they are not considered sufficiently vulnerable, are nevertheless those that carry broader food security responsibilities and their support would leverage wider benefits.

3 Methodology of Restudy

The methodology used in the restudy replicated to the extent possible that used in the original 1993 study in order to allow for comparisons. The innovative element of the original study was its use of the 'cluster' as the unit of analysis, a concept that had been developed in a series of participatory farming – or livelihood – systems work that had been conducted by the Adaptive Research Planning Team in Central and Copperbelt Provinces during the early 1990s. Very simply, since households rarely exist as discrete social and economic units, a methodology had been developed which allowed the overlapping connections between households to be seen much more clearly, as well as the different roles and positions of all individuals within the cluster. The definition of cluster developed then which remains that utilised in the restudy is:

'A group of producers between which there are multiple resource exchanges, usually based on the factors of kinship, labour and food exchange, and or common access to draught power' (Drinkwater 1994)

As noted in the original study, a significant benefit of the concept is that it allows the relationships between individuals of different generations, gender, marital and kinship status within a cluster to be understood. In the restudy, the way in which this allowed the history of the clusters to be tracked, including the histories of all individuals that had been present in 1993, has made possible a depth of analysis of social change which the editorial team is fully aware is only initiated in this report.

With regard to the procedural nature of the methodology, provincial and district level institutions were visited in the months preceding the restudy in order to brief them on the work that would be conducted, and to elicit their interest. At the field level, the process was begun of finding original field team members, seeking the participation of additional local personnel, and locating the villages of the original clusters that had been defined and analysed in 1993. The full external research team, including several of CARE Zambia's staff that have had extensive field research experience with the use of participatory methodologies, then met for two days in Lusaka before the commencement of the field work in order to work through the methodology.

Practically, the study's approach was to: determine the major trends in livelihoods over the preceding twelve years; identify the factors or 'drivers' influencing those trends, and then the role and contribution of the HIV/AIDS epidemic to the changes that had happened. The starting point of the methodology was to understand the broad context of livelihood trends at the macro and meso levels over the preceding twelve years. This was achieved through interviews with key informants, an introductory open community meeting and focus group discussions on the contextual issues. As the fieldwork continued, there was a closer focus on changes at the cluster and household level, and a refinement of the research questions towards an understanding of the specific role of AIDS related mortality and morbidity on livelihoods and agricultural systems. The final phase of the methodology returned to focus group discussions to validate and deepen our understanding around key themes.

3.1 Representativeness and sample size

As the objective of the restudy was to track the original clusters (34 clusters, with a total of around 150 households in Mpongwe, and 18 clusters in Teta) from 1993, the findings from the restudy cannot easily be extrapolated to a wider population group. In the original study the individuals that were interviewed were selected during a community social mapping and wealth ranking exercise. This was done to ensure that those selected represented different categories of vulnerable and resource poor farming households.

3.2 Ethical issues

The preparatory visits to key institutions and original cluster members provided the opportunity to explain fully the purpose of the re-study, and potential implications for households and individuals. During the preparations and actual fieldwork close contact was maintained with health facilities and AIDS service organisations (ASOs), so that team members were aware of referral facilities in the area. During the fieldwork, in community cluster and household interviews, team members explained the nature of the restudy. Individuals were asked for their informed consent to use their names in subsequent reports. For the most part people were intrigued by the restudy. One response from a woman who was the principal interviewee in a cluster in 1993 and 2005, 'well if you don't use our real names, how else are you going to find us in another ten years time', summed up the attitude of many who were part of the original study.

4 Macro and Meso Trends in Zambia

4.1 Macro political and economic trends²

The period between 1993 and 2005 saw the evolution of multi-party democracy in Zambia following the initial welcoming by the Zambian people of the 1991 victory of Chiluba's Movement for Multi-Party Democracy (MMD) over the United National Independence Party (UNIP). There were great expectations that the MMD would be able to reverse the country's

² Much of this section and the following is drawn from McEwan, 2003.

economic decline, which had set in due to a combination of oil price increases in the mid 1970s, a fall in world copper prices, and economic mismanagement.

At the behest of the World Bank and the International Monetary Fund, the MMD began the implementation of a Structural Adjustment Programme (SAP). This included a range of measures that were aimed at restructuring and stabilising the economy in order to restore growth. These actions included: removing subsidies especially in the agriculture input and output markets, rationalising the civil service and cutting public expenditure, closing or selling public enterprises, devaluing the local currency, and opening up the local economy to foreign competition.

During the 1990s the mining sector presented the greatest structural challenge. The consequence of a massive drop in output was exacerbated by the negative impact of occasional price declines. Copper output dropped to a mere third of the highest level ever attained.

In the early 1990s the government adopted a cash budget. While this initially contributed to curbing inflation, it reduced the transparency and accountability of the budget and disbursement process. A small ad hoc group made decisions about priority spending on a monthly basis. These priorities in turn were influenced by political patronage, and resources were maintained in the hands of the elite at the centre.

Economically and socially important ministries were systematically discriminated against in favour of general public services. Ministries could not plan their activities with confidence, leading to inefficient and ineffective implementation. This had particular impact on agriculture with seasonal deadlines. The deterioration in the provision of public services continued, with personal emoluments remaining inadequate, but salary bills consuming a disproportionate amount of the domestic budget.

The state mining corporation, Zambia Consolidated Copper Mines (ZCCM) was finally privatised in 1999 after protracted negotiations, resulting in a sales deal that was well below its value several years earlier. The contraction in mining especially in 1998-2000 strongly dragged the rest of the economy down as demand collapsed.

Even after the removal of input and marketing subsidies, mixed signals from the government contributed to the incomplete liberalisation of the maize economy. This acted as one of the brakes on the trend towards diversification of cropping patterns. Cropping patterns reflected proximity to the line of rail and urban consumption centres. In Copperbelt and Lusaka Provinces the area under maize increased, as a reaction to the liberalisation process that gives incentive to low value high bulk crops near consumption centres. In the Copperbelt sweet potatoes are also on the rise. In Central Province, while area under maize appears to have remained stable, production has decreased, suggesting a decline in input use and productivity. In addition, it appears that the effect of the decrease in maize production has not been matched by increases in other crops.

It appeared that the government completely abandoned the livestock economy, to the extent of failing to support even the provision of public goods such as disease control measures. This is a good, admittedly, that has never been effectively provided in the last two decades, but has consequently seen rural households across the central and southern parts of the country lose their largest asset on more than one occasion during the 1990s, the equivalent in northern countries, of having one's pension plan wiped out.

During the 1990s the Food Reserve Agency (FRA) was established with the purpose of maintaining national strategic reserves to ensure national food security. The FRA's mandate was then extended in view of the slow response by the private sector to provide marketing services. The FRA became involved in the distribution of inputs, in particular fertiliser. In 1996 government began implementation of the Agriculture Sector Investment Programme (ASIP)

In spite of the far-reaching policy and institutional reforms introduced between 1990 and 2000, the level of growth and development in the agricultural sector was not impressive. Between 1995 and 2002, the agriculture sector's contribution to GDP first stagnated and then fell progressively from 18.4% in 1995 to 15.0% in 2002.

Levy Mwanawasa took up the Presidency after the elections in December 2001. His candidacy had been on the back of Chiluba's climb-down from an attempt to run for a third presidential term. Opposition parties refuted the parliamentary and presidential election results, with an on-going petition in the courts. President Mwanawasa, a lawyer, proclaimed that he would offer the country 'The New Deal' promising a rule of laws, not men. The PRSP formed the core guide for development programmes in Zambia for the period 2002-2004.

Within the PRSP, agricultural interventions include the establishment of support system(s) for vulnerable households. One of these is the food security pack that was launched in the 2001/2 agricultural season. This was an attempt by the Government to address the recurring problem of poverty through targeting vulnerable but potentially viable farmers by providing them with a pack comprising seed and fertiliser. The overall objective of the Food Security Pack Programme was to improve crop productivity and household food security thereby contributing to the reduction of poverty among targeted beneficiaries. The programme implemented by the Programme Against Malnutrition (PAM) targets 200,000 farmers in all the 73 agricultural districts for a three year period.

Regional dynamics continue to play a role in the macro economic factors influencing vulnerability. Political uncertainty in Zimbabwe created a common image for the whole of the Southern Africa Region and the parallel foreign exchange markets provided a strong incentive for dumping agricultural produce on the Zambian market at prices that Zambian producers could not compete with. Manufactured goods of South African origin continue to dominate the wholesale and retail sectors not only in the major urbanised areas of Lusaka and the Copperbelt but also in the capitals of the outlying provinces such as Mansa and Mongu.

4.2 Macro demographic, health and poverty trends

The results from the 2000 Census of Population and Housing indicated that the rate of urbanisation was decreasing. While in 1980, 40% of the population were classified as urban, in 2000 this had decreased to 36%. Immigration to the Copperbelt, Lusaka and Southern Provinces decreased, perhaps reflecting a reduction in the availability of formal employment. Outmigration to the rural areas increased: reflecting retirees or retrenched workers re-settling in rural areas or perhaps people living with HIV/AIDS (PLWHA) or HIV/AIDS related orphans returning to rural based relatives.

Per capita incomes contracted to less than 50% of their value in 1975; employment stagnated and high inflation eroded peoples' savings. The key factors contributing to low economic growth were: drought affecting agricultural production in the early to mid 1990s; delays in the privatisation of the copper industry combined with reduced production, stagnant investment, and a deterioration of key infrastructure; increased unemployment in the formal sector.

The percentage of people living in poverty increased from 70% of the population in 1991 to about 74% in 1993, decreased to 69% in 1996 and then rose again to 73% in 1998. This shows that between 1991 and 1998 there was an increase in overall poverty and a very marginal decline in extreme poverty. Over this period, in the rural areas, there was a decline in both overall and extreme poverty, but in the urban areas there was an increase. Although rural-urban differences persisted with overall and extreme poverty being higher in the rural areas, the disparity narrowed between 1991 and 1998. This was on account of the growth in urban poverty exceeding the reduction in rural poverty. Small-scale farmers continued to be among the poorest groups in Zambia. As a group, their level of poverty remained unchanged between 1996 and 1998 at around 84%. In comparison the incidence in poverty among large-scale farmers reduced from 34.9 to 15.6. This indicates increasing differentiation within the agricultural sector and perhaps explains the apparent reduction in overall rural poverty.

Over the 1990s there was an increasing recognition of the potential impact that HIV/AIDS would have at both the macro and household level. By 1993-4 AIDS had become the second major cause of mortality among adults in hospitals at 14% of the total deaths. In 1998, the estimated national adult (15-49 years old) prevalence rate was 19.7%. The rate is higher among women with 18% of those infected being women and 13% men. The peak infection is 30-34 years for women and 35-39 years for men. Since the beginning of the AIDS epidemic TB case rates by 1996 had increased five-fold to more than 40,000. According to official figures (Ministry of Health, 1999), life expectancy had dropped below 40 years by 1999 as compared to over 52 years in 1980. The number of orphans was estimated to be well over 700,000 by the end of the year 2000.

HIV prevalence is more than twice as high in urban areas as in rural areas (23% and 11%, respectively). Provinces with levels at or above the national average include Lusaka, Copperbelt, Southern and Central. The lowest levels are found in Northern and North-Western. Rural population trends of STD and HIV infection vary. The existence of pockets with high HIV/AIDS prevalence made it difficult to obtain a national overview of the situation.

From 1992 the MMD piloted and launched a package of health service reforms that combined cost recovery with decentralisation and devolution of planning, budgeting and disbursement through District Health Management Boards. User fees were introduced in 1994: certain categories were later exempted from charges, on the basis of age, social status, chronic illness and inability to pay. However, exemptions were not implemented uniformly and there were other barriers to accessing health services, such as the distance to health facility and cost of transportation.

4.3 Meso trends in restudy areas

The summary table provides some insights as to how macro level trends have been implemented and experienced at district and sub-district level. The table combines the findings and perceptions of two groups: district based field team members who work in government departments and have an overview of the district, and community and cluster members. In some cases this leads to apparent contradictions in the information.

Government decentralised policies are evidenced by the increase in Rural Health Centres (RHCs) and support to community schools. While there has been an increase in community based public health programmes (malaria control, Trained Birth Attendants), to a certain extent this has been in parallel with increases in diseases and infections.

The census findings of decreased rates of urbanisation are borne out at the local level, with key informants and focus group discussants reporting increased population through births and migration.

While macro level poverty data has shown an apparent overall reduction in the proportion of the rural Zambian population below the poverty line, in essence this masks increasing disparities. Of note is the increased economic differentiation between the two field sites, and in particular heightened socio-economic differentiation within the Mpongwe area. This situation will be explored later in the cluster analysis for Mpongwe which shows increased yields for the better off cluster types but stagnant or falling yields by those more food insecure.

Table 1: Summary of Macro trends for Zambia as a whole and Meso trends for Mpongwe and Serenje

	Zambia	MPONGWE	SERENJE
Factors	Macro level trend	Meso level trends	Meso level trends
	1993-2005	1993-2005	1993-2005
Political	- Multi party democracy	- Mpongwe accorded District status, 1997	
Institutional	- Decentralization policy - Deterioration in govt. services	- Improved support to community schools - Primary schools upgraded to Basic Schools - NGOs starting orphanages - More govt. offices established - Decentralisation played important role in changes - Introduction of neighbourhood health committees - Importance of church groups and chiefly institutions - Increase in NGOs/other institutions, e.g. PAM, HBC	- Establishment of Rural Health Centres - Increase in NGOs - Introduction of community school - Decentralisation of health - District Council - Traditional councillors
Human	- Decreased rate of urbanisation	- Population increased (despite AIDS)	- Population increase (migration & birth) - Reduced attendance in schools / increase in pupil enrolment - Introduction/training of CHWs and TBAs - Malaria control program - More HIV awareness - Increase in orphans - Improved farming knowledge
Health	- User fees	- Increase in AIDS, TB, Malaria - Increased in death rates - Testing available within Mpongwe - ART becoming available within Mpongwe - Communities trained to look after sick - Health improvements in drug supply, infrastructure and staffing in government institutions - HBC teams – mixed views of effectiveness	- Increase in AIDS & STDs - Increase in malaria & anaemia - Improved sanitation (wells, pit latrines, refuse pits)
Economic	- Structural adjustment policies	- Increase in investors in agriculture - Marketing has improved /from many buyers of agricultural produce to one buyer - Govt supports those that are vulnerable - Most marketing for maize and groundnuts. - Increase in employment opportunities/ reduced employment opportunities - Increase in commercial farmers	- Reduction in agricultural input supply - Increase in production - Increase in IGAs for women - Improved markets - Liberalization of pricing - Subsidized inputs - Increase distance to markets - No more cattle loans

	Zambia	MPONGWE	SERENJE
Factors	Macro level trend	Meso level trends	Meso level trends
	1993-2005	1993-2005	1993-2005
		<ul style="list-style-type: none"> - Youth – a lot of small businesses - Increased IGAs for women, e.g. <i>salaula, tuntemba</i> 	
Social		<ul style="list-style-type: none"> - Increase in standard of living due increase in prod - Increased divorced rates 	<ul style="list-style-type: none"> - Increase in stigma
Natural resources		<ul style="list-style-type: none"> - People still have pool 16³, solves problem of hunger - Introduction of new draught animals, (donkeys) after cattle died from corridor 2000/1. - High rate of adoptions: planting technology for maize and use of fertilizers. - Council has annexed land - SSF have lost land some have not - Organic farming of groundnuts - From access to inputs to reduced access to inputs⁴ - Both reduced and increased crop production areas - Increased conflicts between non-commercial land owners and community due to land misallocation 	<ul style="list-style-type: none"> - Opening of new fields - Increased land degradation - Reduction in cattle population - Introduction of fish ponds and bee keeping - Increase in vegetable production - Increase in gardens - Increase in small-stock - Increase in sunflower & cassava prod - Introduction of conservation farming - Increase in off season s/pot - Increase in sweet potato pests
Infrastructure		<ul style="list-style-type: none"> - Tarmac road, improved transport - Telecommunications: land lines and all mobile networks - More houses built in town - Market initiated by EC - Increase in water wells and boreholes - From diesel operated hammer mills to electrically operated mills (1996) 	<ul style="list-style-type: none"> - Increase in grinding mills - Introduction of oil press - Introduction of trading premises

³ Early maturing maize variety introduced by the Copperbelt Adaptive Research Planning Team in the early 1990s.

⁴ Removal of credit facility, loss of livestock, change in government policy (reduction of subsidy from 75% in 2000-01 to 25% this season)

5 Revisiting the Original Clusters

One of the main successes of the whole restudy was the value of the cluster methodology. It exceeded expectations as a tool for the analysis of social change for several reasons. One was its utility in enabling the tracking of often quite substantial household change, and on occasion too, household disappearance. But perhaps most critical were the insights the methodology provided into how people are attempting to deal with the shocks and stresses that have affected them, and the diverse ways in which the resiliency of the matrilineal social system of the Bemba is being tested. The demise of their matrilineal system has been heralded since the extensive anthropological work of Audrey Richards in the 1930s, largely because of its imperfect nature – as will be explained later there is a complex mix of ways in which spouses relocate to in-laws villages, and this can be to the patrilineal as well as the matrilineal village – yet it persists. In part our analysis aims to explain why this occurs, and why it is not possible to understand the social nature of vulnerability and resilience without an analysis that goes beyond the household level.

With respect to the methodology of remapping the original clusters, at the village level, this consisted of ascertaining the whereabouts of the original cluster members. That is, were they alive or dead; were they still present in the cluster; had they married out, or had they left to establish their own village, 'farm' or cluster, or left for an urban centre. In Mpongwe this entailed locating the original village site from the name it had been accorded in 1993. With some trial and error, all 34 clusters were relocated in this way, though following the death of the head, the remaining female members of one cluster had dispersed, leaving the land lying fallow and under the care of only a 'caretaker' male relative who slept there at night. In Teta relocating members of the clusters was made more difficult in that the original case studies did not include the names of all the cluster members, only the relationship to the primary producer (see classification below). Of the 18 clusters in the original study in Teta, 17 were relocated. The 'lost' cluster could not be relocated neither in terms of any of the original members nor in terms of the land they had occupied.

Once relocated, each cluster was then visited during the fieldwork and the mapping conducted both of the current members and of all those who had been present in 1993, allowing too for the reasons to be identified for the changes in the cluster composition and nature. Production data was collected for the primary producer and secondary producers, including if possible for any dependent producers.

5.1 Typology of cluster members

In order to clearly understand and delineate the cluster composition, together with the roles and responsibilities of different members by age and sex the original 1993 typology was refined as follows:

Primary Producer (PP): produces the highest production in the cluster; is the household most likely to own key assets, the ability to organise labour and is ultimately responsible for the food security of other households in the cluster. In the early stages of a cluster

development cycle – the PP may be the head of the extended family, i.e. father or mother with young adult children as SP or DP. As the family head becomes older, one of the sons or daughters – not necessarily the eldest, may become the PP. Since there are three ‘development cycles’ occurring, that of the household, the cluster, and the matrilineal, thus who is PP depends on at what point in the individual cycles, the other cycles meet.

Secondary Producer (SP): has own fields and kitchen

Single Female (SF): single women usually with children who has own field and kitchen

Single Female Dependent Producer (SFDP): SF that does not have her own kitchen and does not contribute substantially to the income or food produced by the household, although she does have access to a field

Single Male (SM): a single male producer with own fields and kitchen

Single Male Dependent Producer: single male without own kitchen and who also contributes little in terms of food or income, although does have access to a field

Dependent Producer (DP): household with two adults that is reliant on others for food

Income Earner (IE): has an independent job and source of income, some of which is invested back into the cluster.

5.2 Description and analysis of changes in characterisation of cluster types

The following descriptions provide a characterization of the cluster types for each of the two field work sites. Comparisons with the 1993 descriptions are also shown, in order to begin to illustrate the changes in farming systems that have occurred over the intervening decade. Starting with Mpongwe, provided below is a description of the cluster types as re-characterized following the field work.

- Cluster type 1: Commercial
- Cluster 2: Small scale successful commercial
- Cluster type 3: Vulnerable: 2-5 ha. Some draught power, tractor and oxen hire, use inputs consistently. SP also food secure to next harvest.
 - 3a. Increase in cultivated area since 1993: 3-5 ha and increased yields +130 – 200 bags.
 - Sources of vulnerability:
 - loss of draught power due to corridor disease, e.g. Dominic Chama (case # 26)
 - dependence on continued access to fertilizer support program (FSP)
 - SP not so food secure and some have become dependent producers (have field of their own, but do not maintain own kitchen); social, and health vulnerability of SP
 - 3b: 2-3-5 ha < 100 bags (50-80) less likely to own oxen.
- Cluster 4: resource poor, < 2 ha, no draught power, no inputs (and erratic access to support).
 - 4a: generally more food secure. PP still a ‘serious’ farmer. Still have potential to improve. But some moved down into that type. Quite seriously affected by AIDS. Higher disease prevalence in families

- 4b: more or less food secure, food lasts with stretching (piece work). Ability/aspiration to improve is less clear than 4a. Role of Pool 16 in producing early maize in contributing to food security. Some 4bs have improved, but because new PP came through.
- 4c: food insecure and often many FHH (DPs) PP also food insecure. May not be a senior/strong male producer. Son-in-law may be main male producer.

These descriptions are compared in the table below with the descriptions from 1993. The main changes to note is that whereas the production levels of the most successful primary producers (type 3a) have increased, overall food security status for many of the secondary households in these clusters, and then the households in cluster type 4, has deteriorated. The two major factors in this are the increased mortality levels of both people and livestock since 1993. Livestock were hit by 'denkete' (corridor disease), an epidemic of which in 1996 decimated cattle levels in the area. Since 1993, the diversity of the food production system has also decreased.

Table 2: Re-characterisation of cluster types, Mpongwe 2005

Cluster type 3: Vulnerable		
Criteria	1993 characterisation	2005 characterisation
Production	3a) 2-5 ha maize, 80-200 bags 3b) 2-4 has maize, <100 bags	3a) increase in cultivated area: 3-5 ha maize and increased yields +130 –200 bags 3b) 2-3.5 ha maize, <100 bags (50-80)
	Some farmers have sorghum; small areas of groundnuts and sweet potatoes	Cropping system maize based; is less diversified than previously, with maybe some sweet potatoes
Draught power	3a) Either ox owners, or hirers of oxen or tractor 3b) ox owners/ hirers/ hand hoe	a) some draught power, tractor and oxen hire b) Less likely to own oxen, but unlikely to use hand hoe for ploughing
Labour	3a) Hire in labour for weeding 3b) Mostly family labour	Have access to sufficient labour
Credit	Use credit	Uses inputs consistently, often obtained through subsidies
Food security	3a) Most food secure. SPs food secure as well as PPs 3b) PPs produce surplus but often little profit after repaying credit. SPs still relatively food secure	3a) Most food secure. PPs producing substantial surpluses and increased profit over 1993. Usually ambitious to produce more. SPs less food secure, and some have become DPs 3b) PPs have limited profits. SPs less food secure
Cash crop (other income sources)	Maize is source of agricultural income	Maize is source of agricultural income
Coping strategies	May have access to other forms of income (selling groceries, small livestock, fish, own carpentry shop, bricklayer, hiring out oxen and cart)	May have other income sources, especially within the overall cluster. This can include formal employment, owning a grocery store/ grinding mill, or engaging in trading activities

Cluster type 4: Resource poor		
Criteria	1993 characterisation	2005 characterisation
Production	<2 ha 4a) Maize is principal crop 4b) Maize is principal crop 4c) Maize and sorghum equally grown	< 2 ha 4a) Maize is principal crop 4b) Maize and sorghum 4c) Maize and sorghum
	4a) 25% had also sorghum, groundnuts 4b) 33% had sorghum Almost no other crops	4a) One farmer has a diversified system with cassava (a cash crop), beans and groundnuts – ex 3a, but left former village 4b) Some sorghum
Draught power	No	No draught power
Labour	Cluster often base	
Credit	Limited credit	no credit or inputs: access to support erratic
Food security	4a) Cluster often based around nuclear family household, and head still a 'serious' farmer. Generally more staple food secure 4b) Largely female clusters – several kitchens often with only one main producer 4c) Small clusters, very food insecure	Food security in these clusters has also been more adversely affected by AIDS than amongst the cluster type 3s 4a) Generally more food secure. PP still a 'serious' farmer. However, food security of other HHs in cluster may be relatively fragile 4b) More or less food secure, food lasts with stretching (often through piece work) 4c) All HHs food insecure. No senior/ committed male PP (may be son-in-law)
Cash crop (other income sources)	Diverse (see below)	Piece work is principal food security strategy
Coping strategies	Sale of livestock, green maize, fish, sweet beer, charcoal burning, weaving baskets, piecework, oxen hire	Aim to find long term piece work on neighbouring commercial farms; attempting to acquire sons-in-law for daughters still in teens

The farming system trends in Teta since 1993 have in many ways been the reverse of Mpongwe. The original cluster type descriptions are no longer valid, principally because the loss of draught power, together with changes in the maize input and marketing system have led to a series of adaptations to the production and livelihood systems, as shown in the tables below.

One change made is that the original cluster type 3 has been divided into 3a and 3b. The primary producer household in cluster type 3a is still able to access draught power, and able to meet the criteria of the 'matching grant' in order to access the fertiliser subsidy program. Cluster type 3b primary producers are no longer able to access draft power (in some cases, they would hire oxen, but they are unavailable). This cluster type uses predominantly hand-hoe cultivation. Smaller amounts of fertiliser are obtained through cash purchase. There is food security at both cluster and household levels.

All cluster type 4s, are now based on hand-hoe cultivation based systems. However, cluster type 4a have been able to maintain food security (relish and staple) at both cluster and household level. Within cluster types 4b and 4c, there is food insecurity at both cluster and household level.

Table 3: Re-characterisation of cluster types, Teta 2005

Cluster type 3		
Criteria	1993 characterisation ⁵	2005 characterisation ⁶
Production	1-3 ha maize 1 clear Primary Producer	Cluster type 3a: Greater hectareage of maize as cash crop (> 2 ha)
	Sorghum, millet, s/ potatoes Cassava, beans Upland flat: maize, sorghum, millet Upland ridges: cassava and s/potatoes Dambos: beans and green maize	Cluster type 3a: Cassava or other crops: value added through processing, and/or used for income or barter to pay for piecework, in addition to role in food security Cluster type 3b: Cassava and other crops used principally for role in food security, and then value added through processing, and/or used for income or barter.
Draught power	Own or hire oxen	Cluster type 3a: Own/hire oxen draft power Cluster type 3b: Predominantly hand-hoe
Labour	Hire pieceworkers and family labour	Cluster type 3a: More hire of pieceworkers Cluster type 3b: Labour: family, piecework, and <i>iciima</i>
Credit	Maize financed through Lima Bank or ZCF credit	Cluster type 3a: Obtain fertilizer (x 50kg bag) through purchase or matching grant Cluster type 3b: Fertiliser obtained through piecework, friends, relatives in 'meda'
Food security	Maize lasts until next harvest plus additional millet and sorghum	Both cluster 3 types are food secure and individual households are food secure
Cash crop (other income sources)	Maize and finger millet processed for beer	Cluster type 3a: Regular source of sizeable amounts of cash income (e.g. hammer mill, relatives in town) Cluster type 3b: More off-farm IGAs Small-stock
Coping strategies	Beer brewing, sale of sweet potatoes, small sales as income sources. Often someone from outside provides some income, used to supplement other incomes.	

⁵ Teta Field Report. 1993.

⁶ Liberty Hambeezu: field notes

Cluster type 4a		
Criteria	1993 characterisation	2005 characterisation
Production	Up to 1 ha maize The Primary Producer is this cluster type tends to be female, whether married, single or divorced	Emerging young SPs Less differentiation between all producers
	F/millet, sorghum, cassava, groundnuts, beans, w/potatoes, i/potatoes Upland flat: maize sorghum, millet Upland ridges: cassava and s/pot Dambos: beans, i/potatoes, vegetables	Cluster type 4s: Increase in <i>citemene</i> .??? Increased sorghum or cassava hectareage to substitute for decreased maize hectareage.
Draught power	Hire or borrow oxen	Hand hoe cultivation.
Labour	Family labour	Family labour. Some <i>iciima</i> or <i>ulutumya</i>
Credit	No credit, but buy fertilizer using cash from vegetable sales or from charcoal burning	Some use of small quantities of fertilizer on uplands or gardens
Food security	Relatively staple food secure	Cluster type 4a: cluster and households food secure
Cash crop (income sources)	Maize, Irish Potatoes, beans and finger millet Gardens: important source of income	Sweet potato, beans and groundnuts sold as cash crops Gardens are an important source of income and investment for other farming activities
Coping strategies	Beer brewing and other minor off farm sources of income	

Cluster type 4b		
Criteria	1993 characterisation ⁷	2005 characterisation
Production	Up to 0.4 ha maize, rely on finger millet (<i>citemene</i>) some sorghum, irish potatoes and beans	Cluster type 4b: Dependent producers Cluster type 4c: More FHH
	Upland flat: maize and sorghum Upland ridges: s/potatoes, cassava Dambos: beans and green maize <i>Citemene</i> : millet	Cluster type 4s: Increased sorghum or cassava hectareage to substitute for decreased maize hectareage. Increase in <i>citemene</i> .
Draught power	Hand hoe based system	Hand hoe based
Labour	Family labour	Cluster type 4b Family labour Hire out as pieceworkers
Credit	No credit, do not use fertiliser	
Food security	Very food insecure, rely on small income sources e.g. brewing of beer to purchase food for survival	Cluster and households food insecure
Cash crop		Beer brewing is principle source of income
Coping strategies	Beer sales, garden, bricklaying	Cluster type 4c Rely on piecework as coping strategy Poor asset base

⁷ Teta Field Report. 1993.

5.3 Analysis of changes in cluster status

In this part of the analysis attention turns to the clusters themselves. For Mongwe, of the 34 original primary producers in the clusters that were surveyed in 1993:

- ❑ Fourteen were still alive and remained the primary producers in the same village. Of these
 - #15 Marie Matalo, who had been divorced in 1993, had remarried
 - #16 Philemon Mano had divorced his wife present in 1993 and remarried
- ❑ Five still lived in the same village but were no longer the primary producers, having been replaced by children
 - #2 Mandikona Kapenda, a widow in 1993, had been replaced as PP by a nephew (son of sister)
 - #3 Dishon Chitumbi and his wife, replaced by a son
 - #27 Dabby Ndhlovu and his wife, replaced by a son
 - #8 Meria Kambilo, whose husband had been blind in 1993 and had subsequently died, still controlled the land but had been replaced as PP by a nephew (son of sister)
 - #25 Enock Makule had been in jail in 1993, his wife had subsequently divorced him and left the village. Since his return to the village, a son has taken over as PP
- ❑ Four had moved to new farms, three of which had moved out of the area
 - # 9 Jackapu Kaipa moved from his in-laws village to his own land 20 km away
 - #13 Winter Mandala moved 45 km away where there was more land for his cattle
 - #29 Boas Kaminsa moved away from his family's village, where his mother had caused friction, to his in-laws village
 - #31 Daniel Kafweni shifted some distance to his in-laws area
- ❑ Eleven had died,
 - a) of whom five were men who had left widows
 - #17 Reuben Malekani had been survived by his widow Lina, who had become an even more successful farmer
 - #1 Luka Mpatisha had been survived by his widow, Mandiana, who had returned to her original village. Luke's grandson, Douglas, had become the PP
 - #18 Balashi Mushankila had died in Lusaka, his wife had left the village subsequently, and the fields had subsequently been abandoned. This was the only instance no-one had taken over cultivation of fields when a primary producer had died.
 - #23 Wilson Chilabikwa had died of persistent diarrhea, and although his wife survived, a daughter and her husband had taken over as PPs
 - #30 James Kateta died, and a daughter and her husband became the PP household, with his wife moving away, and then returning to live in the cluster

- b) three were widows who had died
 - #6 Jestina Malaya, an unmarried mother, had died of severe diarrhoea (aged 46) and been replaced as primary producer by her widowed daughter
 - #12 Loshita Makaya, a widow, died of TB in 2004, which she had had in 1993, and had been replaced as PP by her younger sister and husband
 - #29 Sarah Mushili, a widow, died, and her nephew became the primary producer

- c) three were couples who both had died
 - #4 Pearson Muyoma and his wife, both very elderly, had died, and a grandson had taken over as primary producer
 - #14 Dimas Mukanganuula and his wife had died (he had had recurrent malaria and chronic illness; she had had a swollen leg and tumour), and a cousin of his wife had become PP
 - #33 Dickson Ntoka and his wife both died, likely of AIDS, and his elder sister, a widow, took over as the primary producer

Annex 2 shows the changes in cluster type status for each cluster since 1993, a summary of which follows.

Cluster 3a summary: Of original 7 clusters: 3 have remained the same cluster type. One has improved its production and staple security. Two clusters have split, which has led to a decline in production and staple security for those that remained in the original village.

Cluster 3b summary: Of the original 9 clusters: 3 have remained stable. 2 have improved their status due to the investment of retrenchment packages and access to draught power. One cluster has disintegrated as the remaining family members are based in town. Two clusters have deteriorated. While these have been affected by deaths and high dependency ratios, new PPs are emerging.

Cluster 4a summary: Of the original 8 clusters in this cluster type 4 have remained 'stable'. 3 clusters have improved their production and staple security due to children assuming the role of PP. In this cluster type, only one cluster has deteriorated.

Cluster 4b summary: Of the 7 original clusters 2 have remained stable. Three have improved their status, due to younger PPs emerging. 2 clusters have deteriorated, affected by high dependency ratios and multiple deaths in 2004, and uncertain transition to new PP.

Cluster 4c summary: Of the four original clusters in this category, 3 have improved their status, with new PPs emerging, and in one case, an urban based family returning to cultivate during the rainy season

Three factors have affected negatively the status of clusters that were type 3a in 1993. Of these the major two factors are death (or less commonly aging) of the primary producer, or the relocation of the primary producer. The third factor is livestock disease. Of the four primary producers that have relocated themselves, three did so in order to escape the pressures of other households in the cluster on them, although two were also seeking more

land for cultivation, and the fourth, more grazing space for livestock. Nevertheless, one of the major issues for primary producers is the growing number of dependant households in their clusters. In the villages where farmers moved at least in part to escape their existing relationships – Jackapu Kaipa (#9), Boas Kaminsa (#28), Daniel Kafweni (#31) - the status of those households remaining all declined. In other instances – #8 Hendrix Kambilo, a new primary producer, #21 Alinoty Chinkwaila, #20 Wedson Shilini, #16 Philemon Mano – tensions existed between male headed primary producer households who had substantial resources drawn away from their own households to help secure other vulnerable, largely female headed households in their clusters. It is though often these latter households that have been most affected by HIV/AIDS and chronic illness, and have also taken in children from relatives. This issue will be discussed further in subsequent sections.

One of the most optimistic findings of the reanalysis, in terms of understanding how families attempt to rebuild food security and maintain resilience, even in the face of the adversity that AIDS and corridor disease has brought, is seeing the active efforts to manage generational change and succession. One facet of the flexibility of the matrilineal system is in that land inheritance – and hence primary producer succession – lies mainly in sons taking over land and assets from their fathers. In six of the 34 clusters, sons (and one grandson) had taken over from primary producers, and in all cases their cluster status had improved or stayed the same. In ten cases where the successor primary producer has not been a son, there has often been a decline in the cluster status. Only in two cases – both where daughters became the PP, and one where her husband was a Pastor and had a very different attitude and status to most sons-in-law – had the cluster status actually improved. Nevertheless the whole manner in which families are attempting to secure production assets and food security remains one of the most fascinating elements of the study.

With respect to the Teta area, of the seventeen cluster members originally interviewed:

- ❑ Twelve were still alive and living in the Teta area
 - Of these, the husband of one of the cluster members originally interviewed died during the study, but his wife Emily Changwe was interviewed.
- ❑ Three had moved out of the Teta area:
 - #4 Goshen Chibuye had moved to Lusaka, but his parents still resided in Teta.
 - #6: Ruth Mwenge had moved to Kitwe, but her Uncle still resided in Teta (Boston Makumbi)
 - #12 Charles Kamwengo had moved with all of his family to Mkushi due to social tensions. He sold his land to Ruth Pombolakani (a widow) who now stays there with her father and mother (Captain Pombolakani).
- ❑ Two had died;
 - #14 Adam Chisala, who was survived by his widow
 - #3 Loveness Nkandu. While Loveness was the cluster member interviewed in the original study, her father Laston Mangane should probably have been identified as the PP. After the 1993 study, Loveness's brother Binwell moved to establish his own village, where Loveness moved before she died.

Of the nine clusters that were originally classified as cluster type 3:

- 1 cluster could not be found
- 1 has retained its status (3a)
- 4 have shifted into cluster type 3b
- 2 have dropped to cluster type 4a
- 1 has dropped to cluster type 4b

For the previous cluster type 3, their change in status reflected the loss of draught power, changes in access to inputs, credit and the marketing system.

Of the six clusters that were originally classified as cluster type 4a:

- 2 have improved their cluster type status
- 4 have retained their cluster type status
- 2 have dropped to cluster type 4b

Of the three clusters that were originally classified as cluster type 4b:

- 2 have improved their cluster type status
- 1 dropped to cluster type 4c

Annex 2b provides an overview of changes in cluster classification and contributory factors.

In the previous cluster type 4s, in some cases, a cluster has split thus increasing the total number of clusters, from 9 to 11. A split in the cluster can lead to either improved cluster status or reduced status. In some cases there was a change in the Primary Produce, (#6 and #16) with a strong male producer taking over. Changes in the classification of particular clusters also need to be understood in the context of three interlocking cycles: the household development cycle, cluster evolution, and the matrilineal system.

This section has been largely descriptive. More detailed analysis is now required of the factors affecting change in cluster status. In the field this analytical process for understanding the reasons affecting the change in cluster status began with a brainstorming session around the questions:

- What is increasing the vulnerability of different cluster types, why is their situation deteriorating? and,
- What is increasing the relative resilience of livelihoods, why are certain clusters maintaining or improving their status?

The end output of the discussions that ensued were twofold. First was a list of emerging themes and issues, and their implications, discussed under three headings: economic, social, health. And second, was a list of questions for the follow up focus group meetings that were held with groups separated by gender and generation. In the chapters that follow this differentiation will be continued with separate although interlinked discussions on health, livelihoods and social change.

6 AIDS Mortality in the Clusters

The impact of AIDS in the two study areas has been very different. The Mpongwe area, close to the Copperbelt urban centres, and now a major district market centre in its own right, with an excellent tarred road linking it directly to Luanshya, has been a full fledged stage three site in terms of impact since the late 1990s. In terms of the definitions used in the original study, this means that considerable numbers of people who have contracted the disease locally have now also succumbed to it, completing the cycle of AIDS becoming a local epidemic. In contrast, in the more remote Teta area, AIDS remains a more peripheral disease. This is not to deny that the epidemic has had impact, since there have been deaths largely associated with migrating members of the community. But there remains limited evidence that the disease is being contracted and spread within the Teta area itself, which would mark the progression to a stage two level.⁸

In Mpongwe, of the 123 mortalities recorded amongst the 35 clusters (i.e. including the splits that have occurred), it is estimated that 52 deaths (42%) are likely AIDS related, including the deaths of 13 children. Altogether 18 of the 35 clusters were affected by AIDS related mortalities⁹. However, of these mortalities it is noteworthy that only two sets of Primary Producers died of AIDS, out of a total of 7 AIDS related deaths and an overall total of 36 mortalities (i.e. 19%) that occurred in primary producer households (see the Summary Comparative Mortality matrix on the following page and Annex 3 with the Mpongwe mortality data summarised by cluster.

Comparatively a greater number of AIDS related deaths occurred in Secondary Producer households, 21 of 49 deaths (43%) and in other households, 24 of 38 deaths (63%). These figures show very clearly the inverse relationship of mortality, and particular AIDS related mortality to production and food security status, as well as the fact that it is healthier households that will 'succeed' as primary producers. Of these likely AIDS related deaths, slightly more are of women than men: 24, or 46%, out of the 52 AIDS related deaths are adult women; 19, or 36% are men and the rest are children.

In the 'Other deaths' category are often deaths referring to old age. Accidents are also included in this category, as are poisonings and others where non-specific symptoms were listed by respondents. A large number of these deaths were those of children – 37 of the 71

⁸ This stage model is discussed in the introduction of the report for the 1993 study (Drinkwater, ed, 1993)

⁹ Whilst there was no sure way of knowing if the deceased had died of AIDS, these estimates are based on an account to the interviewers of the symptoms leading up to death, and in addition whether related deaths, in terms of both timing and causes, had occurred with either a spouse or child.

other deaths in Mpongwe, or 52%. Chronic illnesses listed range from mental illness, and there were several cases of this, to anaemia, epilepsy, loss of weight and herpes zoster. The latter two symptoms could indicate HIV related complications. It is important to note that within those suffering from chronic illness or often orphans and widowers. With regard to the mental illness, in several instances this appeared to be related to the trauma experienced by the person concerned, as illustrated in the case of the Mano cluster, discussed after the summary mortality matrix that appears below.

Table 4: Summary Mortality Matrix: Mpongwe and Serenje

MPONGWE										SERENJE									
Previous cluster type	Deaths Potential AIDS related			Deaths Other			Chronic Illness			Deaths Potential AIDS related			Deaths Other			Chronic Illness			
	PP	SP	Other	PP	SP	Other	PP	SP	Other	PP	SP	Other	PP	SP	Oth	PP	SP	Other	
Cluster 3a (total cluster nos. 6)										Cluster 3 (total cluster nos. 9)									
		Son H+w H+W	Female H+child	M+F 5 child. W	M 6 child	F child			W	W	H+W H+W H+w	D		M H	7 ch	H+W		GD	
Sub-total	0	5	3	8	7	2	0	0	1	1	6	1	0	2	7	2	0	1	
Cluster 3b (total 9)																			
	H+w H+W Sister Child	H+W + 2 nd W+ child		5 child 2 H F	H+w Son 5 child 2 H	F Child			W+baby										
Sub-total	6	4	0	8	10	2	0	0	2										
Cluster 4a (total cluster nos. 12)										Cluster 4a (total cluster nos. 6)									
	Son	H+W W H+W+ 2 children H+W	H Child 5 F Child M	H H+W 2 F child	H+W M W F+3 child	4child H F M	F M		2 x F ment. ill 1 orphan 2 F		D	Brother		2H	2 ch	W		W	
Sub-total	1	9	9	6	8	7	2	0	5	0	1	1	0	2	2	1		1	
Cluster 4b (total cluster nos. 3)										Cluster 4b (total cluster nos. 3)									
		H of g/daughter	Son Daughter W+H W H+W W+H H+W	W	2 chrn	2 child	W	child			H D	Son	2 H					DP	
Sub-total	0	1	11	1	2	2	1	1	0	0	2	1	2	0		0	0	1	
Cluster 4c (total cluster nos. 4)																			
		W+ son	M - TB	W 3 H F Child	H	H	W son Mentally ill son	W											
Sub-total	0	2	1	6	1	1	3	1	0										
Totals	7	21	24	29	28	14	6	2	8	1	9	3	2	4	9	3	0	3	

The cluster of Philemon Mano was the most AIDS affected cluster interviewed. A total of 12 deaths had occurred within the cluster since 1993, of which 9 appeared to be AIDS related. A diagram of the cluster structure and of the deaths recorded, indicated by a †, is shown below. One of his daughters, Lister, who has had two of her children die, is now mentally ill, and lives with her married daughter, Mervis. In the same cluster another niece of Lister's is also stated as being mentally ill.



Philemon Mano himself now carried less responsibility for supporting the most AIDS affected households in the cluster, although he does share his fields with other members. He has relocated his own village away from the main village, which is adjacent to the main road. His daughter, Eliza, remains in this village, and bears probably the heaviest burden. Interviewed separately on the issue of caring¹⁰, Eliza said that the whole burden of caring for the sick and orphans in the family fell on her. Some orphans are being looked after by their relatively young uncles, she has the overall responsibility of overseeing that all is well. This had absorbed much of her time, detracting from her own production activities, though at the same time this forced her to continue working hard. She feared for the orphans, since they brought excess burden on the already stretched family, and she could not afford them to go to school. She felt she should be receiving assistance from the government, which at this point in time she was not.

¹⁰ Interview by Catherine Pongolani and Cain Simachenya, 19/1/05.

It was notable geographically that clusters like the Mano's located near the main road, appeared to be more AIDS affected than those living more remotely, but a more specific analysis would be needed to verify this.

In Teta of the 18 original clusters, one was not found, and two had split to form new clusters, and so in the 2005 analysis we are working with 19 clusters. Fourteen of these clusters experienced deaths in the period 1993-2005. Out of these 7 clusters experienced probable AIDS related deaths of primary producers or secondary producers. One cluster had a probable AIDS related death of the Primary Producer's wife (PP) wife (1 death). Six clusters had probable AIDS related deaths among their Secondary Producers SPs (9 deaths: 4 male and 5 female). Three clusters had multiple deaths (i.e. the husband and wife SP).

In sum, there were 10 probable AIDS related deaths: 1 death of a Primary Producer's wife, and 9 deaths among Secondary Producers. There were also three other probable AIDS related deaths of relatives (one brother, one daughter, and one son), who were not recorded as present in 1993, but most likely came back to their home area to die. Of the total of 13 probable AIDS related deaths of primary producers, secondary producers, and dependent producers

- 4 had moved away and died elsewhere
- 6 died within Teta
- 3 returned home to die.

In the other 7 clusters that experienced deaths, two were male Primary Producers, one dying from old age and the other as a result of burns from a fire accident. In addition, three male Secondary Producers and one female Secondary Producer died. There were 7 child deaths recorded in PP households. Two of these were in a household where the wife of the PP probably died from AIDS; however the wife had already moved away at the time of the children's' deaths, and one COD was reported as 'fits', and the other was unknown. There were also 2 child deaths in SP households related to malaria and swelling in the feet.

It is remarkable too that in the 2005 restudy, the 6 adults who were identified as experiencing potentially AIDS related illness in 1993 had all died. In addition an adult daughter had returned home to die and the wife of a primary producer had died. Seven of the 13 deaths are women (54%) and the remaining 6 (46%) are adult men.

The most pertinent finding, however, is that, as mentioned earlier, Teta appears still to be in stage one of the epidemic, with AIDS mortalities mainly associated with those who have contracted the disease externally. This is consistent with the fact that 8 of the 13 likely AIDS related deaths in Teta are from cluster type 3 households who have the strongest external linkages.

In terms of the average number of AIDS deaths per cluster in Serenje it is 0.72, compared with 1.5 for Mpongwe. Mpongwe has a larger population than Teta, one reason why the sample there is the larger of the two, but this means that not only are there more potential AIDS related deaths in Mpongwe in terms of real numbers, but also on average per cluster. What also stands out in the Mpongwe data and less so in Serenje, again possibly because

of the different stages of the epidemic, is the relatively large number of husbands and wives and often their children dying, often leaving no doubt, therefore, that these are AIDS related deaths. Twelve couples in Mpongwe have died, in addition to this a second wife of one of them died and 2 children of another couple, making a total of 27 people, or 52% of the AIDS deaths. In Serenje 3 couples have died, i.e. 6 deaths or 46% of the AIDS deaths. Table below provides more detail on deaths per cluster type across the two sites.

Table 5: Analysis of deaths by cluster type: Mpongwe and Serenje

Descriptor	Mpongwe	Serenje
Cluster 3a: No. in cluster	6	9* (8)
Total Deaths (deaths per cluster)	25 (4.17)	17 (1.89) (2.13)
Probable AIDS death/cluster	1.33	.89 (1.0)
Other Deaths/cluster	2.83	1.00 (1.13)
Cluster 3b: No. in cluster	9	
Total Deaths (deaths per cluster)	30 (3.33)	*
Probable AIDS death/cluster	1.1	
Other Deaths/cluster	2.22	
Cluster 4a: No. in cluster	12	6 (7)
Total Deaths (deaths per cluster)	40 (3.33)	6 (1.00) (0.86)
Probable AIDS death/cluster	1.6	.33 (0.29)
Other Deaths/cluster	1.75	.67 (0.57)
Cluster 4b No. in cluster	3	3**
Total Deaths (deaths per cluster)	17 (5.67)	5 (1.67)
Probable AIDS death/cluster	4.0	1.00
Other Deaths/cluster	1.7	.67
Cluster 4c No. in cluster	4	
Total Deaths (deaths per cluster)	11 (2.75)	
Probable AIDS death/cluster	0.75	
Other Deaths/cluster	2.0	
TOTAL DEATHS	123	28
No of probable AIDS death (%) (/cluster)	52 (42%) (1.5)	13 (46%) (0.7)
No of other deaths (%) (/cluster)	71 (58%) (2.0)	15 (54%) (0.8)

The above information is provided at cluster rather than household level, since primarily it is at the level of the cluster that the impact of HIV/AIDS is experienced. However, it is worth noting that when the above statistics are recalculated at household level the mortality rates of the two area remain at different levels, but are closer. In Mpongwe, 165 households were included in the cluster analysis, making a total of 0.32 AIDS deaths per household and 0.75 total deaths per household. In contrast, for Teta the figures are 0.25 AIDS deaths per household and 0.53 total deaths per household. It is likely though that more mortalities have

gone unrecorded in the Mpongwe study than in Teta, since because the clusters in Mpongwe were larger it was harder for the field teams to collect full information on all the constituent households. Moreover, at the coping strategy level, since this occurs within the cluster, there was no doubting the greater threat to livelihoods, food security and vulnerability of the epidemic in Mpongwe.

Summarising briefly, from the above data it can be suggested that the vulnerability and resilience of a household to the impacts of a death on livelihood and food security depends on the following factors:

- Length and degree of incapacity during AIDS related illness
- Health status of surviving partner/spouse
- Number of dependents left,
- Characteristics of the primary producer (age, gender, stage in household development cycle);
- Overall cluster composition (e.g. number of female headed households, dependent producers)
- Livelihood and agricultural production opportunities

These issues are explored further in the remaining sections.

7 Analysis of the Effects of the Epidemic on Rural Livelihoods

This section of the analysis looks in more detail at the effect of the HIV/AIDS epidemic on rural livelihoods, comparative to other influences. Since the epidemic has had a much greater impact in Mpongwe, it is understandable that AIDS has had a much greater impact on livelihoods there, whereas in the Teta area of Serenje it is other factors that have played a larger role.

To recap, Mpongwe is now a district centre, with a fully surfaced road to the Copperbelt urban centres being completed in 2000. It is a key maize production area for the Copperbelt, with a larger number of commercial farmers both surrounding and now even within the smallholder farming area. The area has concomitantly experienced a rise in area grown under maize and output. There is limited competition for the input and output marketing of agricultural produce, since milling companies have different spheres of influence. Antelope Milling company from Luanshya provides marketing services for Mpongwe, but buys mainly maize and groundnuts. The conversion of the farming area into essentially a maize cultivation area had begun before 1993, but has noticeably accelerated since then. This is evident in the attitude of the young males who attended the focal group discussions on the final day of the field survey. They stated that the ideal production was 100 bags of maize (5 tonnes), 'with 100 bags we can set aside some for eating, clothing, education, medical and agricultural inputs'. Within the 35 clusters surveyed in Mpongwe there were a total of 165 households. Of these just 13 attained this target of a production level of at least 100 bags of maize, so it is a feasible, aspiration target, but one that only a select elite attain. How these farmers are different will be explained below.

The link between maize and modernity was noted too by the older women in their focus group discussion in Mpongwe, as being a factor in its increased production, as well as its easier marketing. The production of an older staple crop like sorghum is dying out because of changing trends, and the fact that the reduced hectarage now means that pest, especially birds, are more of a threat to particular fields. The women stated that sorghum 'makes people *ichungwa*' – a fool, even though it remains cheaper to grow than maize since it does not require fertilizer.¹¹

This does mean, however, that social differentiation in Mpongwe is very much based on access to external inputs, a situation quite distinct from Teta, which is more remote and has hilly terrain. In Teta the change that has occurred over the last decade is the reverse. There is less maize in the farming system, not more, and the reason is the reduced access to seed and fertilizer inputs the area now experiences. Instead, cassava production has increased, as has also the production of a crop like sweet potatoes. Overall the farming system remains diversified and focused on low input cultivation, with indigenous forms of composting being important (either ridge and furrow cultivation, particularly in wetlands, or forms of traditional *citemene* on the uplands). As a consequence, compared with Mpongwe, Teta also exhibits markedly less social economic differentiation.

These distinctions between the nature of the farming and livelihoods systems in the two areas, and hence in the nature of social differentiation, and coping mechanisms, are discussed in more detail below.

7.1 Agricultural production: Differentiation, vulnerability and resilience

The principal determining factor in Mpongwe between cluster type 3 and 4 farmers is very clear: the former use draft power, hybrid seed and fertilizer inputs in their production of maize, and as a consequence their production and yield levels are considerably higher than the latter. In the following table maize production information for the primary producers is compared by cluster type and for the two study periods. What is noteworthy is that for the cluster type 3a farmers there is an increase in yields, production and sales levels for many of the farmers in 2002/03 compared with 1992/93, but for other cluster types the differences are in fact surprisingly small. Some of the cluster type 3b primary producers show some increase in yields over 1992/93, but there is limited change amongst the cluster type 4 primary producers, reflecting their limited access to inputs in both periods.

¹¹ Full notes of these focus group discussions are contained in the base field reports for each site.

Table 6: Mpongwe Maize Production: Comparison by Cluster Type and Year

Cluster Type	# of PPs growing		Area (ha) (Range)		Use of fertilizer		Use of draft power		Output		Sales		Yield (bags/ha)	
	92/93	03/04	92/93	03/04	92/93	03/04	92/93	03/04	92/93	03/04	92/93	03/04	92/93	03/04
3a	7	9	2-6	3-5	✓	✓	✓	✓	80-200	90-300	75-160	<280	27.5-57	25-120
3b	9	5	1.5-4	1-4	✓	4/5	✓	✓	30-85	30-80	10-75	0-50	15-36	20-63
4a	8	11	0.8-4	0.5-3	✓	4/11	x	x	30-45	18-80	20-35	0-45	15-40	9-35
4b	6	4	0.8-1.6	1-2	1/6	1/4	x	x	10-50	10-40	3x 20-30	0-10	8-25	10-40
4c	4	5	3x 0.25-1	0.5-1	x	x	x	x	2-3	1-20	0	0	3-10	2-20

Within Mpongwe, the cut off between those farmers that can afford access to maize inputs compared with those who cannot, has undoubtedly become sharper. In the focus group discussions on key issues that had arisen in the cluster interviews, the group of older men laid out all the reasons why this has been the case:

- Generally maize production has increased even though a few individuals in higher clusters produce most of it.
- Maize production has declined in lower clusters due to inaccessibility of inputs and loss of animal draught power to corridor disease.
- The 50% requirement for the fertilizer support program (FSP) is too expensive for the lower clusters, though the previous 10% down payment to lending institutions was affordable.
- Safety net support programs have had some benefit, though they also have the problem of targeting the rightful beneficiaries.

The men also pointed out that in order to improve nutrition a more diversified farming system would be beneficial – even though few were pursuing such. The group of younger women indicated that the reduced diversification was because poorer clusters now lacked the resources to provide the inputs these crops required, especially in terms of both seed and labour. In the 1993 study report the data is incomplete for crops grown other than maize, but Table 7 below does show for 2003/04 that it was within the better off clusters that a small level of diversification is occurring, that is, it is now only amongst these farmers that the seed and labour required is available. Cluster type 4 farmers still have some sorghum in their system, but now almost solely restricted to the most food insecure type 4b and 4c

categories. Many farmers of all cluster types were also growing the open-pollinated, early maturing Pool 16 green maize variety, propagated and distributed by the Copperbelt Adaptive Research Planning Team (ARPT) and the EU Smallholder Development Project, in the early 1990s. One further crop from this period was also apparent, though it appeared on a limited scale, and that was *chingova*, a high-yielding, white, sweet potato variety.

Table 7: Cropping diversity by cluster type, Mpongwe

Crop	Number of PPs by cluster type									
	3a		3b		4a		4b		4c	
	92/93	03/04	92/93	03/04	92/93	03/04	92/93	03/04	92/93	03/04
Maize	7	9	9	5	8	11	3	4	3	5
Sorghum	1		2		2		2	2	3	3
Cassava		2				2		1		
Soya Beans		1				1				
Groundnuts		3		1	2	1				
Sweet Potato		3			1			1		
Sunflower		1								
Sugar Beans		1								

All these points validate the trends that the information from the cluster interviews shows, that the farming system has become more focused on maize, and in this process, those with access to inputs have increased their production levels, whilst those without access have remained food insecure and highly vulnerable. One factor that has played a role in these trends is that it is the better off farmers who are reliably able to access subsidised inputs, in the last few years through the fertilizer support program. Though designed to have a reduced level of subsidy over time, for 2003/04 and the year previous, a 50% subsidy was received, with a 50% cash down payment being required (i.e. 25% of the basic price). Since only better off farmers were able to raise this kind of capital prior to planting, access is automatically limited to the cluster type 3 primary producers, and a limited number of the secondary producers in the same clusters. In contrast, all households in the poorer clusters have received limited support, including through the safety net programs intended to reach them but lacking the resources to achieve the coverage that would be required.

In looking at the change between 1993 and 2004, one of the critical groups of farmers are those with primary producers in cluster type 4a. In 1993, most of these primary producers still had access to fertilizer (means), whereas in 2004 only four of the eleven did, or 36%. The farmers in this cluster are hand hoe farmers, which limits the area they can cultivate, and thus the loss of access to fertilizer is affecting yield and production levels.

Two caselets illustrate this distinction. In 1993 when she was interviewed, the production of Elisa Bulaya and her husband, Amos Mali, (cluster #10) had declined because she had spent a year nursing a sick daughter who had eventually died of AIDS. At that time, the Mali cluster had declined to type 3b, because of the reduced area planted and subsequent output level. As a cluster they have remained one that has been significantly affected by AIDS. A further three children and their spouses have all died, two sets of whom were living in the

area. They have left orphans, some of whom are residing within the cluster, and others with more extended children of the Bulaya's. For them as a cluster the fertilizer subsidy is all important. They use less than is recommended and Elisa mixes basal and top dressing. There are now three main household groupings in the cluster: Elisa and her husband Amos Mali, then Amos jnr and his wife Beatrice, and then a divorced daughter, Ethel, whose eldest two sons, Keegan and Hilton, though neither are married, have their own fields and small houses. All of them put their money together and have registered as one person in the coop and obtained 8 bags through the FSP, and have done so for 3 years. Ethel bought 2 bags of fertilizer additionally, as did Keegan. According to Elisa, they like the present arrangement 'since you pay 50% up front, and then everything you produce is yours, unlike previous micro-credit schemes when after the harvest you had your crop taken from you'. Amos owns 12 head of cattle and two, an ox and a cow provides the draft power for the whole cluster. Elisa and Amos at 4 ha cultivate the largest area, but altogether the cluster has 11.5 ha under maize production, whilst Elisa also has small areas under sweet potatoes and cassava production, and Ethel has a lima (0.25 ha) each of groundnuts and soya beans. The latter will be used mainly as cash crops. In 1993, Elisa also had sorghum which she has stopped growing 'because I have enough food and was tied of chasing birds'. For 2003/04 Elisa and Amos produced 150 bags of maize, whilst Ethel and Amos jnr also reached the target figure set by the Mpongwe youth of 100 bags, now making the cluster comfortably 3a, and able to carry its orphans (four grandchildren live with Elisa) – but thankful for the fertilizer subsidy.

Mali village can be contrasted with a smaller village, Mushili (cluster #29), where Sarah, who in 1993 had been a widow and the primary producer, has since died. The cluster now consists of Mathews, her last born, who is now married and has four young children, and her nephew, Nicholas Chileshe, also married with five children, and who is marginally the largest producer. Sarah had other children, all of whom left for Lusaka and since 1993 have all died, together with their spouses. This has left the elder children of Foster, Sarah's eldest, to take in their orphaned siblings and nephews and nieces. There remains some contact between the urban and rural arms of the family, with some of the children in Lusaka visiting periodically.

Neither Nicholas nor Mathews can afford to access the FSP, and neither have they accessed any of the input safety net programs previously. Nicholas had tried to register but had been told that he was young and strong and therefore not vulnerable. Instead he had done piecework labour at the fertilizer distribution storage shed, but was still waiting to be paid. Each family helps the other at land preparation, and they practice *ichilimba*, that is, they will take turns in each other's field, as does Mali village. Planting and weeding they carry out separately. Although both sets of adults are young and healthy, the lack of fertilizer is affecting their production and keeps both families food insecure. In order to stretch out the food to the next harvest, both Nicholas and Mathews carry out piecework. At the time of the interview, Mathews was doing piecework at Kapula Farm (Peter's farm). The two families share food, if one is short. If one has a 'tasty' relish they will also share. For 2003/04, Nicholas and his wife Sylvia produced 10 bags of maize, whilst Mathews and his wife Grace produced 8 bags of maize and 4 bags sorghum. In January, each had 2-3 bags remaining,

meaning with the aid of the piece work they would stretch to the next harvest. As such they are a cluster type 4b, the consequence of their lack of inputs.

For Teta, Annex 4 provides an analysis of changes in area and production for key crops between 1993 and 2005, for each cluster. The matrix below summarises the range for each cluster type, and compares this to 1993.

For every cluster type the hectareage under maize cultivation has decreased. In 1993 it was common for cluster 3 primary producers to cultivate up to 3 ha of maize, whereas in 2005, the range was reduced to 0.25 -1 ha. Even Alice Chibale the only remaining cluster type 3a (case study # 15) who produced the equivalent of 293 x 50kg bags of maize from 3 ha in 1993, has been reduced to cultivating 0.5 ha. Of interest is the fact that her maize hectareage remains low even though she was able to replace one of the two pairs of oxen that were lost to corridor disease.

Primary producers in cluster type 4a have reduced their area under maize from an upper limit of 2 ha in 1993 to 1ha. The reduction is less dramatic for primary producers in cluster type 4b, as they have reduced from a range of 0.25 – 0.8 ha to 0.25 – 0.625 ha. The more resource poor clusters still grow the same amount of maize, using recycled seed and have accessed fertiliser through NGO programmes.

If the area under maize has decreased, what has been the response? For cluster type 3b, area under finger millet has also gone down; a trend that is more marked in cluster type 4a, but for cluster type 4b, the area under millet has stayed around the same at 0.5 ha. This range of experience across the cluster types, confirms the mixed responses obtained during the focus group discussions. Perhaps it does show that for the most resource poor farmers, *citemene* (but is it upland or *citimene* millet) cultivation is still an important means of ensuring sufficient fertility for a millet crop.

Sorghum cultivation has also reduced in cluster 3b primary producers, with not much change for cluster 4a, but with an increase for primary producers in cluster 4b.

However, from the analysis of the agricultural data, the most important change appears to have been that area under cassava has doubled for primary producers in cluster types 3b and 4a, with a smaller increase for primary producers in cluster type 4b.¹² This appears to be a clear indication that the Chief's efforts to ensure that every household has a field of cassava are working.

There have also been increases in area under other crops: sweet potatoes, sunflower, groundnuts, and beans. It should be noted that there are difficulties in estimating hectareages, when crops are intercropped and grown on mounds, ridges, and in uplands and dambos.

¹² It should be noted that the Teta area is divided into soils that are more suitable for cassava and those more suitable for sorghum.

The combined effect of loss of draught power and reduced access to maize inputs is reflected in the changes in estimates of the total area under cultivation, and the relative proportions under different crops. The case study of Eliza Mwape below illustrates this in more detail.

Box 2: Case study: Eliza Mwape

In 1993 Eliza Mwape (with 4 children living with her) lived in a cluster comprised of her mother, her sister and husband and another sister. In 1993 there is no record of her husband, but interview notes in 2005, stated that her ex-husband had remarried in Lusaka. In 1993 she hired oxen, and used family and hired labour.

In 2005, the cluster composition had changed:

- Eliza's mother had died in 2003 from suspected witchcraft.
- Eliza, her two sisters and their families have remained stay within the cluster, but the number of dependents has increased and all households in the cluster are female headed.

Eliza, the Primary Producer, is relatively food secure: she has made up for the reduction in maize production by substituting a range of staples (sorghum, cassava, sweet potatoes and some millet). She manages to hire in church members to help with labour, and her son (still in school) and niece's husband may also help. Eliza's sisters (Joyce, Beatrice and Jennifer?) are secondary producers in the cluster. However, they are less food secure and have a high number of dependents.

PP: Eliza: with her two last born children still living with her, together with a niece (married, husband elsewhere looking for work) and nephew (still at school), who are both orphans. (These orphans were from a younger sister)

SP1: Joyce, widowed after her husband died from suspected poisoning in his sleep. Two of her adult daughters (and three grandchildren) eat from her kitchen. One daughter is married, but the husband is elsewhere looking for work; the other is divorced.

SP2: Beatrice unmarried with 6 children

SP3: Jennifer, another adult daughter of Joyce (or sister) also lives in the cluster with her five children; her husband is polygamous and does not assist her with crop production.

The table below illustrates the changes in cropping patterns.

(Case study #17: Helen Chirwa)

Table 8: Changes in cropping patterns 1992/3-2003/4. Eliza Mwape (#17)

Crop Production details	1992/3¹³	2003/4
Maize (upland) Ha Fertiliser Production Retention	1ha 8 basal + 8 top 61x50kg 20x50 (March)	0.4 ha 2x50kg from Scope 9x50kg 7x50kg (December)
Millet Ha Fertiliser Production Retention		2003/4 not cultivated 0.13 ha (2002/3) none 1x50kg May-October
Sorghum Ha Fertiliser Production Retention		2003/4 not cultivated 0.4 ha (2002/3) none 21.5x50kg July-September
Cassava Ha Fertiliser Production Retention	Cultivated but no estimate of ha.	2003/4 no estimate of area 0.4 (2002/3) none All year
Sunflower		0.4 ha= 2x50kg
Maize and beans Green maize (dambo)	0.175 ha beans maize, beans i/potatoes	Beans 0.13 = 2x50kg 0.13 = '2 tins'
Sweet potatoes	34x10m = 5x50kg	0.4 ha = 27x50kg

Comparing the changes in cropping patterns over the period of eleven years:

- Hectarage under maize has reduced by half
- Different combinations of crops are grown from year to year: in 2003/4 sorghum and millet were not planted. However in 2002/3 she planted some sorghum (0.4ha) and millet, (0.13 ha). These crops were not reported in 1993.
- Cassava cultivation was reported in 1993, but no area specified. In 2002/3 she reported to have planted 0.4 ha.
- In 1993, she was reported to grow green maize for sale – this she continues, although the area and harvest is small.
- Her area under sweet potato and harvest has expanded considerably (0.4 ha) with 27x50kg sacks being harvested in 2003/4. This was used for direct consumption.

Eliza as Primary Producer has been able to retain her level of food security, however other households in her cluster have not been able to do so, as there are a high number of dependent producers (i.e. without their own kitchens) and dependents. Within the high number of dependents there are some orphans.

¹³ In 1993, production was reported in 90kg bags, this has been converted into 50kg. Conversions to hectares: 4 lima = 1 ha. 1 acre = 0.4 acre.

They rely on piecework, the sale of chickens, green maize and vegetables. Thus the cluster, which in 1993 was classified in cluster type 3 is now a cluster type 4b. The implications of the high number of dependents are discussed further in section?

7.2 Discussion

In Teta, both the loss of oxen and reduced availability of inputs are contributing to the reduced hectareage under maize. However, in addition and as a comparison with the Mpongwe re-study site shows, changes in the marketing system have also influenced cropping patterns. In Teta focus group participants spoke of the longer distances that they had to travel on poor roads to market their produce. In Mpongwe, the new tarmac road, closer proximity to urban centres, and the existence of traders in the area makes marketing easier. This situation underlines a major difference in the way macro policies and trends have been experienced in the two areas, and the resulting socio-economic implications. In Mpongwe there is now greater socio-economic differentiation, reinforced by the increase in commercial farmers, and conflicts over land. In Teta, it would appear that socio-economic differentiation has remained limited.

Further analysis is now needed to identify, whether, while all clusters have been affected by loss of oxen and changes in the maize input and marketing system, whether some clusters types were more vulnerable to the impacts of these changes than others, and if so what role has HIV morbidity and AIDS mortality played on this.

8 Taking the Strain: Tension and Persistence Within Matrilineal Kinship Relations

Research and debate around the nature of matrilineality in Southern African and particularly in Zambia has a lengthy history. Our findings are in line with much of the recent research and critique of earlier accounts of the nature of matrilineality; these earlier accounts predicted that in the face of urbanisation, commoditisation and monetisation, matrilineality would ultimately disappear, producing more patrilineal type family forms (e.g. Richards 1961, 1962; Poewe, 1980). Later work shows how these forms could persist side by side and that in fact matrilineality was particularly resistant and resilient to economic change (e.g. Crehan, 1997; Peters, 1997; Samuels, 2001; and Moore and Vaughan, 1994). It is within this framework that this study can be viewed: not only is matrilineality resilient to economic change, but its inherent adaptability and flexibility enables it to accommodate deaths and changing circumstances associated with death. In particular, findings from this study show how individuals, families and clusters are able to realign themselves, following matrilineal principles, and accommodate to suspected AIDS related deaths and the ensuing burdens that occur.

Two aspects of matrilineal systems emerge from the research as being key to understanding processes at work in communities: these are the flexibility and choice regarding residence locations and the relative fragility of the marital bond. It became apparent that these features are central to the dynamics of the two study sites and to understanding the nature of

resilience and vulnerability in the intervening period between the first and second studies. These two features are interlinked, with each both causing and being a result of the other.

The potentiality for choice, flexibility and option is built into the residential decision making. A key factor influencing the choice of residence is moving to a location where an individual expects his livelihood to be more stable and sustainable. Stability comes from issues such as having access to adequate labour, sufficient and good quality land and a cluster in which there are relatively few deaths. There is clearly an element of self-interest in these decisions but these are also intricately bound up with notions of moral obligations towards ones relatives. Relationships based on kinship have two aspects, on the one hand a particular morality underpinning sharing and reciprocity and on the other hand, a sphere of transactionality with its associations of utilitarianism and self-interest. Whilst in the morality discourse much behaviour is fixed, so that one cannot pick and choose towards whom one has a moral obligation, a key feature of transactionality is flexibility and choice with respect to who to claim from and what claims to honour. This notion comes across very clearly when considering how people can choose between various options concerning where to live (Samuels, 2001).

Flexibility of residence is also facilitated by relatively few assets, houses are often not built to be very long-lasting and as such no large amount of investment into them has occurred. All this adds to the notion that people can easily move on, and in and out of villages/clusters, for varying lengths of time; moves can be induced by marriage, divorce, deaths or simply in search of a better livelihood.

The other persistent theme in the literature about matrilineality is the vulnerability of the marriage bond. This vulnerability is partly attributed to, what Audrey Richards identified as, the matrilineal puzzle (Richards, 1962). This is a situation in which a father does not have links to his own children and where the person who has authority over children is the mother's brother. The point here is that in matrilineal societies the sibling bond between brother and sister is very strong because the sister provides the brother's heirs. This has implications for marriage. As Richards herself explains:

The problem.. is the difficulty in combining recognition of descent through a woman with the rule of exogamous marriage. Descent is reckoned through the mother, but by the rule of exogamy a woman who has to produce children for her matrikin must marry a man from another group. If she leaves her own group to join that of her husband (in virilocal marriage) her matrikin have to contrive... to keep control of the children... The brothers must divide authority with the husband who is living elsewhere. If, on the other hand, the woman remains with her (matrikin) and her husband joins her there (in uxorilocal marriage), she and her children remain under the control of her family, but her brothers are lost to the group since they marry brides elsewhere and they are separated from the village where they have rights of succession (Richards, 1950, p246 in Peters 1997, p126).

It has been argued, therefore, that partly as a result of the bond with matrikin, marriages are often short-lived, with many women moving away from their husbands, usually taking their

children with them and going to live with a brother, sister or other matrilineal relatives who are the children's close relatives. This residence may be temporary until the woman marries again, but again, should this marriage end, she can return to the cluster where she and her children are key matrilineal relatives (see also Gatter, 1990; Harrison, 1996, 2000).

The following is an explanation of Lamba marriage given by the older men in Mpongwe: 'Marriage in Lamba culture means a man shifts to the woman's home for a period of time. This leads to insecurity on the part of a man as he cannot freely develop and is seen as an outsider who does not own any land and can be chased anytime. This leads to increased number of divorces in the Lamba culture. Consequently there is an increase in the number of female headed households. This has negatively impacted on food production and on the other hand these female headed households have created tension amongst their sisters in law and their brothers who have come back to stay with them in their village after graduating from the in-laws. The older men feel this practice needs to be changed to adopt a patriarchal system which offers more stability in marriage and production'

Whilst in the past marriage used to be uxori-local with men moving to live with their wife's kin, more and more viri-local marriage is being witnessed, where the wife moves to stay with the husband's residential group soon or immediately after marriage. As they progress through their life cycle, with increasing numbers of children, this married unit will leave to set up their own. This issue was voiced during the older women's focus group discussion in Mpongwe: 'The Lamba culture is slowly changing and young men are taking their wives to their homesteads due to the pressure of too many mouths to feed at the in-laws homesteads'.

Box 3 summarizes part of a discussion with young women in Teta on the advantages and disadvantages of the matrilocal residence system.

Box 3: Advantages and disadvantages of matrilocal system: younger women (Teta)

Advantages:

- Women could feel freer at their mothers village and they cannot be mistreated by the men; Labour benefit for the woman and her family,
- The prospective husband is charged very low fees to marry as women are not perceived to be for sale. If someone charges more than K20,000 becomes a laughing stock in the village.

Disadvantages:

- If a village has many women and they bring in their husbands, this leads to scarcity of land for cultivation.
- Often there are disagreements between what the in-law wants to bring into the homestead, the mother-in-law interferes in the decisions of son-in-law.
- There is no privacy, especially for the men, 'cannot come staggering drunk at home'
- During the first 4 years when man has to put food into mother-in-law's granary, there is a tendency for selfishness and the men want to go and eat elsewhere so as not to share their food with the bigger group.
- The practice leads to an increase in numbers of farms and independent households.
- Also cluster disintegration because of this system
- Increase in population also leads to scattering of households.
- Women don't pay much attention to mother-in-laws; they rarely visit them, don't help them with food, etc.
- Mother-in-laws demand a lot in terms of labour from son-in-law.
- The son-in-law and wife cannot start own kitchen until the mother-in-law gives the go ahead, usually wait either 3 years or if have a child can get own kitchen earlier.

Focus group of younger women. Facilitator: Helen Chirwa

Interestingly, while there are some clear advantages in remaining in the mother's village, it appears that they are outweighed by the disadvantages. This was a feeling expressed by young women in both Teta and Mpongwe. In Mpongwe, the majority of respondents felt that if they had a choice they would rather be at the husband's village because of the following reasons:

- marriages are stronger and stable
- most problems that arise are from husbands side and are better dealt with by husbands parents/family
- men are best disciplined by their own relatives
- men work harder in their own villages
- men build better houses when in their own village
- fewer divorces (if the husband is in his wife's village, the chances of divorce are much higher because he will just pack his bags and go when there is conflict).

Taking the above voices of the women further, from the perspective of an existing cluster in which the PP may have died or may be too old to maintain his position as a PP, a key means of maintaining the viability of a cluster is to try and recruit a successor PP, or potential PP, e.g. a SP. Ideally these should be healthy, married young males with production ambitions, i.e. preferably not in-laws who can pick up and leave any time. Where a daughter (and her husband) do succeed as primary producers, the cluster is often more food insecure.

What is also being witnessed in both study sites, partly as a result of the fact that male labour is in high demand, is the easy mobility and choice of residential location of men: they can choose between in-laws, own parents and independence. In the Mpongwe focus group discussion with young men it is interesting to note the different residential settings of the respondents: three were married and living with in-laws; three were unmarried and living in their own villages and four married and living in their own homes. When asked about the benefits of marriage the following responses were given:

- To avoid diseases
- To acquire a work partner
- To be independent, wanted freedom from parental control
- Freedom to have sexual relationships with partner of choice, don't need to hide
- Pressing sexual feeling (coming of age)
- Realised had sufficient means to start own household so got married.

Sequential marriages or relationships are often the visible effect of flexibility in residential patterns. These often involve men at the early stages of married life where they may not yet have children and hence have less obligations and more freedom to move between different locations. Even if they do have children, they may feel that they are not valued by other members of the cluster as they are seen as outsiders, are not afforded respect and are 'used' just for their labour power. Often these men may continue to work on other cluster members' fields, never ultimately owning the product of their labours. These former were views expressed by the young men during the focus group discussions; women, on the other hand, spoke about their husbands as being lazy, drinking, not being responsible nor

interested in investing properly in the land, always looking for ways of making a 'quick buck'. The latter was especially the case in Mpongwe where off farm income generating opportunities in the form of piece work was available in the near by commercial farms (see individual site reports).

Interestingly, when the young group of men were asked why they think there is marriage instability, they gave the following answers:

- 'Women have become lovers of money'
- Men misbehave when they have a bit of cash, they abandon wives and go for younger girls (adultery, infidelity)
- Parents-in-law demand too much money from the son-in-law; parents-in-law create pressure by setting impossible tasks and setting standards which are always shifting; if they fail they call the man 'the poor' '*bapengele*'.

Another key effect of illness and death is the increasing number of orphans. What is evident from both sites is that as a result of the flexibility and in a sense absorption capacity of a matrilineal kinship system, orphans have been absorbed into clusters and their needs have been taken care of by different members of the cluster. Clearly this has led to some clusters and individuals being stretched to tipping point and some have gone over. This is especially the case where orphans are left with elderly carers who likewise have little support, as one woman in Teta said: 'It is a big struggle raising the orphans being female headed, a widow and advanced in age. It just feels as though I have insulted or done something against God'.¹⁴ The woman goes on to say that she is struggling to raise these orphans now when she herself is supposed to be looked after.

This is not to say that clusters or groups of households do not fuse and fracture due to other causes. The notion of groups of households being involved in processes of fission and fusion has been written about in classical anthropological studies (e.g. Fortes, 1958, Turner, 1957). As groups of relatives living together marry and reproduce, their households increase in size. In order to accommodate this expansion, at certain points in time, new units are set up or fissioning occurs. These processes of fission and fusion are endemic to any situation in which groups of relatives reside together on the basis of kinship. Often fissioning occurs as a result of tension, power struggles, but also the inability of a cluster to survive because of increases in illness and deaths of its members.

What is perhaps heightened now, especially in areas such as Mpongwe and giving rise to growing social tensions is the increasing inequality of clusters due to, for instance, differential access to subsidised inputs, and the ambition of those who have to become 'modern' farmers. These processes have affected usual expectations around sharing, distribution and the role of families and clusters. This issue was aptly expressed by older women in the Mpongwe focus group discussion: 'The notion of sharing is dying away because the wealthier ones in the family cycles are distancing themselves away from the poorer ones, as the poor cannot give back. This has led to families disintegrating'.

¹⁴ Field notes of Doras Chirwa

One can argue, therefore, that the processes already existing within the matrilineal system regarding the fragility of the marriage bonds, and the ability of men to 'get-up-and-go' and marry again has in fact assisted with livelihood systems adapting to death and illness, especially in cases where HIV/AIDS has potentially devastating effects on individuals, families and clusters' ability to adapt and survive. Once a spouse dies, the widower can easily become absorbed into another cluster not only by drawing on kinship ties but also through marriage.

The following case study from Teta provides an example of how matrilineal residence patterns influence the household development cycle, and provide the benefits of flexibility in choices of residence.

The Ngosa's: cluster dynamics: 1993 - 2005

In 1993 members from two clusters were interviewed: Paul Ngosa and Felly Mwape. In the original notes there was no record that they were in fact siblings, and that the clusters that they were then living in exchanged resources. In 2005, some of the history of the changing nature and composition of their respective clusters was elucidated. Paul and Felly's parents: Mrs. Elita and Mr. Saxson Ngosa, had spent a period prior to 1993 in Elita Ngosa's brother's village. Saxson Ngosa decided to establish his own village. It was in this village that the 1993 study team found Felly and her husband Thomas Mwape (a bricklayer), and Felly's sister, Miriam and her husband, Clement.

In 1993, Paul Ngosa had already established his own village in which he was staying with his second wife. At that time Mike Ngosa, (the second son of Elita and Saxson Ngosa) was staying in his in-law's village. In 1993, the father (Saxson) and two sons (Mike and Paul) shared draught power. These had been acquired by Mike through a loan, but were kept in his father's village. The 1993 notes state that if anything happened to Mike, his mother (Elita) would take charge of them. In the 1993 notes for Felly, it appears that she does not access these animals, even though she was staying in her parent's village (Elita and Saxson Ngosa).

The father, Mr. Saxson Ngosa had passed away in 2000. At that point, the headmanship of the village passed to Mike Ngosa (the second son), and he moved from his in-laws to his late father's village. His widowed mother Mrs Elita Ngosa remained in the village.

Felly's husband Thomas Mwape, had died in 1999 - he was coughing for one month and complained of chest pains and swollen legs for four months. Felly continued to stay in the village, now headed by her brother Mike.

Paul Ngosa had divorced his second wife in June 2000. She later died in 2002 (after being sick for one year with head pains, chest pains, vomiting and diarrhoea). He married his third wife, Janet Chibale, in July 2000. After that he moved from his village, because his wife wanted to help her mother (Liness Chisenga). Janet had four children from her previous husband, three of which lived in the cluster.

In 2003 Miriam, and her husband Clement to move to Paul's village to help look after it as he was staying with his in-law. They continued to stay there, with their four children, where they were interviewed in 2005.

The oxen recorded in the 1993 study died from corridor disease in 1998. Both Mike and Paul said that their intention had been to re-stock when inputs had been more available, but now things were difficult. Paul and his wife sometimes hire labour for piecework for making mounds or weeding. Mike sells produce in order to hire workers. Paul also helps his mother-in-law in November-December to make mounds, the men do the heavy work first and then the women do the smoothing.

There is an *iciima* group of 6 relatives and friends: Paul, Miriam and Felly (siblings), Loveness (Mike's wife) Assa Chisasa, Issac Nkandu. The 2004/5 season, they had done the cultivation together and planned to do the weeding together. This group is part of a conservation agriculture group under GEF (Global Environmental Facility). Mike was previously involved in the *iciima* group, but the other group members thought that he was absent for too many days (Mike said to take his son to hospital – but also heard that he was missing other days as well) and so the group asked him to leave.

A note on witchcraft

The underlying persistence of beliefs about witchcraft is a recurring theme in much research in Zambia. Witchcraft can be seen as a pressure valve which releases strains and tensions caused by a variety of factors. These factors are often related to power struggles, to achieving economic security, to illness and death.

Inevitably, informants during the study often used witchcraft both as an explanation and a cause of uncomfortable occurrences: older women in Teta, for instance, said that the effects of witchcraft resulted in the break-up of social relations at the expense of economic development due to jealousies as people feared to invest for fear of being bewitched. What emerges here is a form of balancing or levelling off mechanism in which accumulation leading to potential differentiation and wealth inequalities is curtailed through local processes and mechanisms, in this case witchcraft.

A similar explanation was given by the young women in Teta, they saw the causes of witchcraft: '... like a circle, witchcraft starts from jealousy, jealousy comes from observing high yields in the neighbours which eventually causes the person feeling jealous to become lazy and use witchcraft as an excuse or cause for his low production. Because of this low production the gap between the rich and the poor widens. Then the rich get pointed out as the witches rather than the poor....'

Witchcraft was also given as an explanation for breaking up of clusters and the scattering of people as once witchcraft accusation are made the accusers or the accused move on. Clearly witchcraft accusations are also resorted to during periods of illness and death, especially when other causes are unclear and/or when various treatments do not seem to be working. HIV related complications almost by definition, therefore, fit into this framework.

It is interesting to note that a discourse around witchcraft was less in evidence or near the surface in Mpongwe. It is possible that the research team did not pick up on it or it may be further below the surface than in Teta. Mpongwe is clearly a more urbanised and 'modern' setting than Teta so perhaps people feel that these beliefs need to remain more hidden. Additionally, due to the proximity to the Copperbelt, the Lamba have always been closer to the 'modern' than the Lala of Teta. This is not to say that they do not exist and in a location such as Mpongwe in which inequalities based on farming systems is increasing, one can predict that a recourse to a witchcraft narrative is highly likely.

The status of women

One final note is also needed in this section, more specifically on the status of women given that the burden of care – either for the chronically ill, or for orphans – falls on women. Thus, even if in principle the additional burden of procuring extra food or income requirements falls more on men, it is women who are left carrying the tension of whether this in fact happens. As Eliza Mano noted from the most AIDS affected cluster in Mpongwe, she carried the whole burden of caring for orphans, since even if some are being looked after by their relatively young brothers she has the overall responsibility of overseeing that all is well. The 'overseeing' includes providing for and bringing up the orphans. In Eliza's case, her father, Philemon Mano, although the cluster head had reduced his responsibilities by relocating his village a short distance away, as well as remarrying, since Theresa, Eliza's mother, had died in 1994.

Nevertheless, the young brothers Eliza refers to, do have a responsibility and therein lies the tension for women in the matrilineal system. Men as husbands or in-laws can get up and leave quite easily, but as parents, brothers or uncles, it is harder. In the restudy we did meet a great many vulnerable women, but we did not meet any women that had been wholly abandoned by men.

One of the villages where women were most vulnerable was that of Maria Matalo's (case #15, Mpongwe), who previously in 1993 had been a divorced mother with several unmarried or divorced daughters with children in the cluster and no obvious male providers in the cluster. In 2005 this was not the case. She had remarried, and a husband of one daughter described in 1993 as 'gone fishing', walked into the village during the interview. He lived next door and although Maria is listed as the primary producer, for most years it would appear her in-law, Davy, and his wife, her daughter Agrista, produce more. And in fact even in 2003/04, when the younger couple had produced only marginally more than Maria, this was because Agrista was attending to a sick child, now recovered, of her own daughter in Lusaka. For the 2004/05 season, their area under maize cultivation had increased from 0.5 ha to 2 ha, and so consequently the cluster was reclassified from type 4c in 1993 to the less poor type 4b in 2005. Women are highly vulnerable, but as matriarchs greater social protection is afforded them within the matrilineal system than commonly appreciated. Even as the ambitious young men, Alinoty Chinkwaila and Wedson Shilini were forced to note, within their villages they have strong redistributive responsibilities for which even the erstwhile Alinoty was hard pressed to evade.

Like many aspects of our analysis, the precise nature of women's vulnerability was not easily tied down and by no means as simple saying that a divorced woman, with children that included orphans, was automatically amongst the most vulnerable households. Certainly, she would rarely be food secure in her own right, but she may not be insecure either.

Finally, in the context of the focus group discussions at the end of the fieldwork, it was clear that women split themselves into three categories: the matriarchs, who formed the cluster group of older women; their daughters who are middle aged, and in turn may be having daughters who might potentially be married with young children, and then the young, newly married, or newly with child, women. These latter two groups met together as the younger women's focus group with very obvious definite distinctions of status.

In sum, our analysis to this stage begins to open up the kinds of questions an exploration of which is required for a greater understanding of gender inequity. The matrilineal system, with its social and locational options, has benefits for women that are one of the main reasons matrilineal kinship persists.

9 AIDS, Sex, Belief and Tradition

'AIDS is here it is just that people here have strong blood and it takes long before they can get sick, Just come back in future we may see it happening.' (Focus group discussion older women, Teta)

It is evident from both field sites that AIDS is now a known disease: many people have seen it and have been affected by it. This is in contrast to the 1993 study where it was only starting to trickle into the consciousness of the inhabitants of Mpongwe and Teta. As was seen in section 6, potential AIDS deaths were identified for both sites, with larger numbers in Mpongwe. Some respondents when describing death and illness of cluster members would refer to HIV or AIDS: one story was retold of a woman who when finding out she was HIV+ tried to commit suicide by throwing herself into the well; luckily she was found and the cluster now 'copes with the illness comforted by the church and turning to God'. AIDS also came up clearly during the health trends discussion.

People spoke about the way AIDS was affecting them; this information was mostly from Mpongwe as the effects of AIDS in Teta is yet to be strongly felt (see section 6). The following statement from the young woman's focus group discussion in Mpongwe provides a useful overview: 'AIDS reduced household members, gave extra responsibilities due to nursing, it increases poverty, it increases vulnerability on the entire household as resources become over stretched, the number of orphans increased and it is difficult to look after orphans as they expect special care'. Thus production goes down as there are less people producing - even if the patient is still farming he is weakened so is output is less - and more time is spent on nursing and caring for the patient. The number of orphans increases and this places other burdens on already stretched clusters and households. A fear was also expressed by some of the danger of getting infected through caring for the sick. According to the young men: 'when the bread winner dies, the family strength goes down, the extended

family disintegrating, leading to the emergence of a nuclear family'. The young men also spoke about the emotional and psychological pain that AIDS causes, and how this and grief (*ubulanda*) also leads to disruption of work to surviving relatives due to low morale.

People in both sites were clear about the main symptoms and indicators of AIDS: in Mpongwe the following list of symptoms was given:

- excessive loss of weight
- continuous diarrhoea
- persistent cough
- abscesses
- body pains
- back ache, leg pain
- malaria type symptoms
- loss of appetite
- herpes zoster (*umulilo wa lesa* – fire from god),
- craving for special foods.

There also was an apparent understanding that nowadays there is 'kind of TB that is associated with AIDS and which takes time to heal or may never get better'. In both sites there was an interesting discussion around STDs, with the possible links to HIV/AIDS being hinted at through statements such as the following: 'These STDs saw the birth of AIDS. With STDs people would get mad and die' (Teta).

There was awareness that everyone can potentially contract HIV, that mothers could transmit to their children and that having multiple partners put people at risk. Similarly, people knew about the risks of sharing razor blades. Some interesting answers were given to the question of who people thought were most affected by AIDS, these were some of the responses:

- Men with lots of cash – those who have groceries, hammer-mills, cars, etc
- Women who are poor, the ones who are always short of cash, don't have food
- Women with lots of cash – go out with men with more cash, these men transmit to these women as well.

Despite the above 'correct' information being voiced in both sites, there was also evidence that this information was not appropriated by all groups in the sites (young, old, men, women, etc.). This is particularly the case of the older women who seem to be missing out on messages around prevention and transmission. Additionally the link between AIDS and HIV remains misunderstood, people see AIDS but they do not understand how it results from the HIV virus. Finally and perhaps most importantly, knowledge and information is still far from effecting behaviour change. The latter is particularly evident in both sites around sexual practices and preferences.

Some of the above issues were highlighted during discussions around condom use. Many people pointed to condom use along with abstinence as being key preventative measures - 'condom use should be encouraged for those who cannot control themselves' (older men,

Mpongwe) – nevertheless, understandings and notions about use were less clear. During the older women's group discussion in Mpongwe, some women did not know what a condom looked like whilst others said it was too late to introduce condoms. This latter opinion was supported in part by the youth group discussion in Mpongwe: when asked what they would choose between condoms or extramarital affairs, they said 'it was best to abandon the woman because condoms break'. They went on to say that whilst condoms are readily available in the area, they are often not used because they are regarded in the same way as masturbation, and '...masturbation destroys the nerves on the manhood'. Views were, however, mixed with some supporting condom use, especially for those who pick prostitutes '...masturbation is not good because you are alone, no fulfilment; condom use is better because there's contact with another person... it's better to wear a condom and go with a prostitute than masturbate because you are not alone'.

Another area in which information and knowledge was not transferred into practice or behaviour change was the issue of sexual cleansing. This was happening to different degrees in both sites. In Mpongwe, whilst wife or husband inheritance has been discouraged and communities no longer practice it, sexual cleansing is still being practiced. The family of the deceased spouse sprinkles the surviving spouse with white mealie meal and the spouse is expected to have sex with a stranger to 'shake off' the spirit of the deceased. If this ritual is not completed or if the sexual act is done with a condom, the surviving spouse runs mad as the spirit of the dead cannot leave the widow/widower. The majority of the respondents said that it would be difficult to do away with this practice for fear of the widow/er becoming mad and because the family would not accept the person resuming sexual relations until the act was performed.

This was happening though to a lesser extent in Teta as well, where some widow/er inheritance still occurs. Whilst there was awareness of the dangers of sexual cleansing in an era of AIDS, reactions were mixed: the young women in Teta said that if signs are not showing at death then that person is not deemed to have died from AIDS so sexual cleansing can occur. Amongst older women, the following was explained: '... the people concerned reflect on the nature of the illness the deceased partner died of and if it was AIDS related there is no partner inheritance but will just put mealie meal and put a string of beads on the wrist and let the person go. In some cases that person still goes to find someone especially from the same clan on which to clean himself/herself. However if the symptoms of the sickness were not AIDS related like sudden death due to headache or accident they have to inherit or do sexual cleansing.....'

There was also the sense that if there is considerable wealth to inherit then concerns about what the spouse may have died of are forgotten as the inheritance prospects overcome the fear of HIV/AIDS. In sum, it would seem then that fear of the dead spouse's ghost (going mad, and misfortune on one's family) is greater than fear of contracting HIV (which is 'silent'). It would seem that people fear AIDS, but not HIV.

Whilst most people have been affected in some way by HIV or AIDS, stigma persists. According to the older women in Mpongwe: 'If anyone is sick for more than a day everyone begins to link the individual to HIV/AIDS. Stigma actually begins at the hospital with the

separation of TB patients and continues in the village. If someone has had a patient most people, instead of sympathizing, they came to check on how quick the patient is deteriorating until when they die.'

Others spoke about how the family becomes a laughing stock; how equally the care givers 'become arrogant towards the patient because it take a long time to nurse'. As a result the patient develops fears, feels rejected and despised and starts to self-stigmatize. Names abound for suspected AIDS patients which are both cruel and humorous, see Box 4.

Box 4: Names for AIDS patients

- *Kaliaka* – it has lit, ignited
- *Bali ka kula ingine* – the engine has been dismantled.
- *Bashelefyepapalazo* – someone worn out, left without much flesh, all skin and bones
- *Ili pamabwe* – car wreck sitting on stones
- 'moving coffin'
- *Shalinintepe* – has acquired new army stripes, looks like shoulders are raised
- *Yalimendeke* – plane which has taken off, wings of planes raised again
- *Bali pa li honda* – walking like you are riding a motorbike
- *Amandanda* – means egg in Bemba, play on fact that word eggs sounds like AIDS
- *Kalayenoko* – say good bye to your mother

Regarding the availability of support, whilst home based care programmes were working in the areas, especially in Mpongwe, their reach and effectiveness are limited. People in Mpongwe in fact spoke about them as fuelling stigma as they were associated with AIDS.

A note on Antiretroviral Treatment (ART)

As was shown in the meso level trends (see Table 1), ART has now becoming available in the Mpongwe area. Many people seemed to have heard about the availability of the drug. Some were more sceptical than others about it: whilst the older men felt that it was 'worth spending money on treatment than buying fertilizer', the young men were more hesitant as they realised that in order to get the drug they had to have an HIV test and the fear of the test was enough 'to kill them psychologically', they continued by saying that it was better not to go for testing so as to avoid too many worries

10 Implications

The restudy of the two contrasting sites, has provided the opportunity to identify and understand some of the 'long wave' impacts of the HIV and AIDS epidemic. The use of a 'cluster analysis' provides a breadth and depth of understanding that moves beyond the treatment of the household as a discrete unit of analysis.

A cluster analysis has allowed a scrutiny of both horizontal interactions along kin, gender and spatial lines, as well as vertical relationships across generations. This in turn has allowed exploration of a third dimension, the interface between three interlocking cycles: the household development cycle, cluster evolutionary cycle and the intergenerational matrilineal system cycle. In practical terms this leads to a better appreciation of the interplay and synergies between:

- social relationships based on cultural identity, inheritance norms and residential patterns,
- the ability to take advantage or not, of differences in soils and topologies and to engage in different livelihood, production and cropping systems; and lastly how both of the above influence and are influenced by
- the 'well-being' and health of individuals, eco-systems and social and political institutions.

The following section summarises some key emerging issues which are then used to highlight practical programming and policy implications for HIV and AIDS interventions in relation to prevention, care, treatment and support and mitigation. A final note around the future use of cluster methodology is also provided

10.1 Farming systems: change and adaptability

Crops patterns and practices

There is a distinct difference between the two sites, correlated largely with their relationship to markets. Mpongwe, with its improved accessibility to the Copperbelt urban markets and with its increasing number of commercial farms, is a major maize producing area, with an infrastructure down to the extension services, to match. Cluster type three farmers there have been able to access subsidised fertilizer inputs for maize and their production and yield levels have increased. For the cluster type four hoe cultivators, without the financial resources to make a 50% cash down payment for the fertilizer subsidy, yield levels are considerably lower than for the type 3 farmers. Moreover, these farmers also show less diversification in their farming systems, indicating that being forced to cultivate their maize through the use of hoes reduces their ability to plant other crops too. The fact that many adult men in these cluster types are also engaged in piece work labour for food security purposes later in the growing season, increases the labour shortfall in their own fields. At the moment the challenge of how safety net schemes can support poorer clusters more systematically remains unanswered.

In contrast, in the more market remote Teta area, there has been a movement towards, (or return to) more traditional crops that do not require artificial fertilisers (in particular cassava, sweet potato, millet and sorghum). However the majority of these crops do not benefit from formal marketing arrangements.

Soil fertility maintenance: Farmers are acutely aware of soil fertility maintenance techniques and the relative values of existing technologies. However, within Teta beliefs around witchcraft still play a role in explaining low yields, leading to a degree of fatalism. There is a clear need to ensure that local knowledge about 'traditional' crops and soil fertility techniques

is systematically maintained and transferred across generations. This includes knowledge through all steps of the food chain:

- Seed selection and conservation.
- Agronomic cultural practices.
- Processing, conservation, storage, and technologies for adding value.
- Preparation and utilisation for family members with different needs.
- Activities around the introduction of conservation agriculture, and conservation farming should also be cognizant of the history and reasons for existing soil fertility maintenance practices.
- Young men and women also need to be able to access and utilise these technologies, i.e. that the channels and mechanisms used for supporting these interventions actively address the specific constraints of young people.

Changing practices around *citemene*: since the early 20th century there has been concern about the sustainability of *citemene* based cultivation. The restudy findings found mixed indications as to whether *citemene* was increasing in response to the reduced availability of maize inputs. Some outstanding questions needing further exploration include:

- To what extent is 'imyunda' (re-working of old *citemene* fields, cutting down branches and twigs and burning in order to create fertile ash patches) an adaptation or taking over?
- Impact on food security?
- Impact on ways of obtaining soil fertility?
- Influence of moving to farm system?
- Influence on single women, and use of millet beer to hire male labour?

Livestock interventions: practical implications

Disease control measures would benefit everyone, cattle owners, and those who would like to hire, through increasing availability and lowering hiring costs. Interventions that can contribute to reducing agricultural labour and time demands could also have the potential to benefit clusters where households are caring for PLWHA or members with other chronic illnesses.

However, in Teta, the Lala do not have a long tradition of livestock rearing, therefore, animal (large and small-stock) production and management interventions would need to be carefully designed to build capacity in this area. This could be done in a way to involve young men and women through the establishment of dedicated associations that could also provide the 'space' for the development of dialogue and voice among the young. This could allow a 'technical' entry point for key social and cultural issues as well.

More critically though, attempts to introduce livestock disease control measures in Zambia have mostly been unsuccessful. Historically two key factors have been an issue. One is that for any kind of measure to be successful, whether spraying, dipping or vaccination, full compliance of all owners is required. This requires a community led approach. Second, vaccination measures have often been taken in the midst of an outbreak leading to a clamour as to whether it was the disease or the vaccination that killed animals. In the Central and Copperbelt Provinces, approaches and channels for restocking would need to carefully

consider the implications of targeting interventions in matrilineal as well as patrilineal societies. Thus, despite its importance, it is unclear if the conditions exist for livestock disease prevention measures to be implemented more widely in Zambia; at the least to begin with a review would be needed of the best instances of approaches in the country that are more participatory and community led in nature.

With respect to general implications on livelihoods and social protection:

- Vulnerability, in terms of gender, age and social economic status, can only be understood clearly in the context of cluster relationships (e.g. healthy dual headed families can be more vulnerable than a FHH with orphans), and targeting should be of resource poor clusters rather than at HH level.
- Whilst national food security has focused on maize intensification, crop diversification remains important for HH food and nutritional security – but requires emphasis on retention of local knowledge (being utilised in Teta but lost in Mpongwe), as well as appropriate policy support.
- Diversification within and without agriculture contributes also to greater flexibility and resilience in its need for different types of labour at different times (system can be adjusted more easily depending on when resources are available).
- The potential tragedy of further outbreaks of unchecked livestock disease remain inadequately addressed.

10.2 Health: implications for the prevention, treatment and mitigation of HIV/AIDS

There are belief systems that are deeply embedded in the culture and community. These are affecting health seeking behaviour and outcomes, e.g. sexual cleansing and witchcraft.

- Protection messages around 'happy couple', are mostly seen only as promoting promiscuity and are not appropriate for the cultural context. They do not deal with issues related to culture and witchcraft, nor the practical issues and decisions facing men and women about sexual intercourse.
- Education around HIV/AIDS is not being translated into practice because of lack of understanding; people understand the signs and symptoms of AIDS, but do not fully appreciate how it results from the HIV virus; the silence of HIV is not understood, and inadequately addressed in prevention campaigns.
- Ongoing stigma takes place largely because AIDS is known only to end in death. The presence of ARVs, if available reliably, could make a sizeable difference – 'if there is treatment, people's attitude towards patients would change'.
- Targeting the vulnerable: still needs a broad based definition of vulnerability, not just AIDS related (e.g. not all orphans are vulnerable, and not all vulnerable children are orphans).
- Changing behaviour requires changing the way people see themselves, their own concepts of identity. Sexual practices can change – condom usage is discussed now, whereas was rejected previously – but better information is required as a basis for local discussion.

The need for systematic transmission of intergenerational knowledge could be met through ensuring that:

- The role of older women (aunts, grandmothers) as the channel for transmitting cultural norms about sex and sexuality is understood so that appropriate messages on HIV prevention are discussed with and channelled through them and not parents.
- Content of messages: separate AIDS which people know and acknowledge, from HIV which is 'silent'.
- Cultural beliefs are better understood around the linkages between human sexuality and fertility, the well-being of kin and family, and the well-being of production systems. Fear of the dead spouse's ghost (going mad, and misfortune on one's family) is greater than fear of contracting HIV (which is 'silent'). Thus people fear AIDS, because they can see it, but not HIV.

10.3 Institutional landscapes

The institutional landscape ranges from and includes the household and community level structures and mechanisms to NGO, FBO and government. The particular focus here is on how these institutions are or could respond to the challenges of AIDS. In both sites, household and family structures are key to both supporting and caring for the sick. It is also within these structures that information is exchanged between different generations. In Teta the mixed focus group said that it is during these family evening discussions that HIV/AIDS and the risks it involves is discussed. These kinds of exchanges could be encouraged through, for instance, ensuring that family members have the correct information and that they know about the existence of services.

Beyond the family and cluster level, community level organisations exist which also are seen to contribute to the wellbeing of the community. These organisations may include churches, neighbourhood health committees and the beekeepers association in Teta. The home based care teams in Mpongwe are also central for wellbeing related issues. Whilst many of these organisations may have as part of their mission to discuss issues around HIV/AIDS and may also be actively engaged in working with suspected or known AIDS patients, the actual impacts of them remains to be tested.

NGOs and FBOs exist in both sites: they work with orphans (SCOPE OVC), within the agricultural sector (Heifier International) and within the health sector (Catholic Mission in Mpongwe, CRAIDS in Teta). Again, there were mixed reactions given towards these institutions.

There was a sense from both sites that existing organisations or associations are not able to actively embrace all age, gender and economic status groups. A number of factors are related to this, such as: the need to pay membership fees; more 'marginalized' people do not attend meetings; the organisations have limited coverage so existing members want to protect benefits for their own use.

- In particular, young people and those perceived as being high risk defaulters are in danger of being excluded. This situation becomes more critical in the context of HIV and AIDS.
- Young people should be supported to create their own physical and social spaces for dialogue, and opportunities for their 'voice' to be recognized in traditional power fora.

10.5 Cluster analysis methodology: future utility

Understanding and analysis

- Gender and generational dynamics.
- Vertical and horizontal analysis.
- Understanding the interface of three interlocking cycles: the household development cycle, cluster evolution, and the matrilineal system, will help to understand vulnerability.

Targeting considerations

- Targeting at cluster level rather than household level, i.e. not solely female headed households, but resource poor cluster types, as they are not able to support their female headed households.
- Reinforce existing informal social protection mechanisms.

Programming options

- Programming options: e.g. it can make sense to protect/rebuild livestock assets of better off households, for example, primary producers in cluster types 3b or 4a that do not have their own draft animals, because this would guarantee the food security of other households in their cluster. (This would particularly be the case in Mpongwe, where the maize production system requires draft power for better yields to be obtained. For poorer cluster type 4b and 4c clusters, access to animals would also improve food security, if the primary producer had the interest and capability in taking care of animals. Many farmers post the corridor disease outbreak have been reluctant to attempt to restock for fear they could lose the investment again in the future.)
- Providing a range of mutually reinforcing programme options for the different cluster types allows more sustainable transition/graduation options.
- Allows less emphasis/tighter use of pure 'welfare' type handouts.

Most of all the validation of the use of the cluster methodology in the restudy – by farmers and the research team alike - suggests that there is substantial potential in its wider value being considered for both future research as well as programmatic interventions. The methodology undoubtedly provided far reaching insights into the nature of social change, and at its most fundamental, the duree of life of all those in the clusters as they struggle, some with more, some with less success, to survive. Whilst the resilience of social networks was one of the main lessons from the restudy, it remains clear that even for better off farmers, they will continue to experience the tensions of extended family networks that have been put under increasing strain by AIDS, by livestock disease and by changes in the economic and policy environment. People will continue to live uncertain lives.

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Annex 1: Mpongwe Primary Producers, 1993 and 2005

1993 Primary Producer	Present Status of Former Primary producer	2005 Primary Producer
1. Luka Mpatisha + w. Mandiana	Died 2000, old age (diarrhea, oedema), w. Mandiana left to return to village of her family	Douglas Mpatisha (grandson to Luke) + w. Flavia + 3 children
2. Mandikona Kapenda (widow)	Still alive, but too old now to be productive. Daughter Loveness manages her land now; Mandikona contributes to labour and feeds from daughter's kitchen	Moffat Lokungka (aged 25, son of Eness, sister to Mandikona) + w. Eliza + 1 child
3. Dishon Chitumbi Snr + w.	Dishon Snr still lives in village, but is now a SP, not the PP. His wife is also still alive	Watson Chitumbi (son) + wife + 4 children
4. Pearson Muyoma + wife	Died 2000 and wife in 2002 of old age	Obeti Kausen (grandson of Pearson) + w. Christina + 4 children
5. Mutwale Ndeke + w. Zulita	Mutwale (79 years) is still nominally PP, but main income from job as a security guard on neighbouring farm. Zulita also still alive	No change. Mutwale remains PP. Has a step son (Shadreck) and nephew (Howard) who have recently returned to the village, but are still establishing themselves
6. Jestina Malaya (unmarried)	Died 2000, aged 46, of diarrhoea	Charity (daughter of Justina), aged 33, widowed (husband died suspected food poisoning) + 3 children
7. Noah Mukonki + w. Lina	Noah, b.1939 and Lina still PPs	No change
8. Meria Kambilo	Meria, aged 70, is still alive. Husband, who was blind, died of old age in 1997. Meria still controls the land but is no longer PP	Hendrix Kambilo (son of Liya, Meria's older sister) + w.?+ family?. Hendrix recently returned to the village but may not stay – seen as mean by the others and wants to move out of the village
9. Jackapu Kaipa	Moved from his in-laws village in Mpongwe and now lives on an 8 had farm, 20 km away, with wife and 3 children + older son (Aaron) from another marriage, + his wife and 2 children	Wickson Dimas + w. Frieda + 5 children. Wickson's relationship with Jeckapu is unclear, but is on maternal side
10. Elisa Bulaya + h. Amos Mali	Both still alive and still the PPs	No change

11. Lottie Chifutumba	Lottie Chifutumba + wife	No change
12. Loshita Makayi (widow)	Died 2004, from TB (was suffering from it back in 1993)	Evelyn Makaya (younger sister to Loshita) + h. Gilbert + 1 child
13. Winter Mandala + wife	Winter has now moved 45 km away where there is more room to graze his cattle	Anna Mandala (daughter) + h. John Kasanda + children. They cultivate but both are also business people
14. Dimas Mukanganuula + wife	Died 2000 from recurrent malaria and chronic illness. Wife died in 2002 from swollen leg and tumour	Leonard Mainda (cousin of Mrs M, who came to look after her when she was sick) + w. Foster + children
15. Marie Matalo (divorced)	Marie has now remarried and remains the PP	Marie + h. Pison
16. Philemon Mano + w. Beauty	Philemon has divorced Beauty, who has moved away, and remarried Petronella. Has also moved his home nearer his fields, away from the road, where the remainder of the cluster remains	Philemon + w. Petronella
17. Reuben Malekani + w. Lina	Reuben died in 1995 from old age, wife Lina now manages the farm and is PP	Lina Malekani (widow)
18. Balashi Mashinkila + w. Eness	Died 2002 in Lusaka, was old. Wife Eness left village to live with son	Fields not cultivated, caretaker relative only (younger son of Eness from a different father)
19. Zakeyo Sota + w. Grace	Zakeyo Sota and wife are still PPs	No change
20. Wedson Shilini + wife	Wedson Shilini and wife remain PPs	No change
21. Alinoty Chinkwaila +w. Doris	Alinoty and Doris are still the primary producers. His former second wife, Edna, died in 2004	No change
22. James Banda Snr +w. Monica	James Banda Snr, who was away in Lusaka, with his wife Monica had the largest landholding in 1993, although James Banda Jnr had the largest production and was the PP. James Banda Snr and his wife remain SPs. He is now living in village	No change in PP, though James Banda Jnr now has the largest area as well as production output.

23. Wilson Chilabikwa + w. Eniah	Wilson died 1997 from persistent diarrhea. His wife Eniah still cultivates but is no longer the PP	Gift (daughter of Wilson) + h. Pastor Makule
24. Elima Kampanga + h. Saleti	Elima and her husband remain the PPs	No change
25. Lona Makule + h. Enock (in jail)	Lona divorced Enock in 1996 and left the village. Enock has since returned and lives alone as a SP	Million (son of Enock) + w. Astrid + children
26. Dominic Chama + w. Matrina	Dominic Chama and his wife remain the PPs	No change
27. Dabby Ndhlovu + wife	Dabby and his wife remain alive but are now SPs	Alfred Ndhlovu (son of Dabby) + w. Monica + children
28. Boas Kaminsa + w. Fidilesi	Boas and his wife left the village, because of disputes with his mother, and moved to a new home in his in-laws village	Elina Kaminsa (sister to Boas) + h. Cephas Katuta. Live in his village near to Kaminsa village
29. Sarah Mushili (widow)	Died in 1997, was old	Nicholas Chileshe (nephew of Sarah) + w. Sylvia + children
30. James Kateta + w. Enita	James died in 1997, from headaches and pneumonia. Enita, who has an amputated leg, is now dependent	Efi Kateta (daughter of James) + h. James Chimbaya
31. Daniel Kafweni + wife	Shifted to another area where his wife's parents are	Pearson Kafweni (an elder brother of Daniel) + W. Ronica + children
32. Enoti Kasokola Snr + wife	Enoti and his wife remain the PPs	No change
33. Dickson Ntoka + wife	Died in 1994 and wife in 1995. Both likely died of AIDS – had been recurrently ill with fevers, headaches, diarrhoea	Margaret Ntoka (elder sister of Dickson), a widow, + children
34. Maybin Malaya + w. Beatrice	Maybin and his wife remain the PPs	No change

Annex 2a: Summary of Changes in Cluster Classification, Mpongwe

Cluster type 3a	2	3a	3b	4a	4b	4c	Comments
#17: Reuben Malekani	X						Area increased; hiring plough
#32: Enoti Kasokola		X					PP remains the same
#28: Boas Kaminsa				X	x		Cluster split: original PP shifted and is now 4a; those that remained have become 4b
#26: Dominic Chama				X			Lost cattle from corridor in 1995, and increasing number of orphans.
#21: Alinoty Chinkwaila		X					PP remains the same, though more orphans in cluster
#9: Jackapu Kaipa		X	x				Cluster split: original PP moved and is still 3a, the rest that remained have become 3b
#4: Pearson Muyoma				X			PP and wife died. Distant relative took over in 2002. Potential to re-establish production
3a Summary: Of original 7 clusters: 3 have remained the same cluster type. One has improved its production and staple security. Two clusters have split, which has led to a decline in production and SS for those that remained in the original village.							
Cluster type 3b	2	3a	3b	4a	4b	4c	Comments
#33: Dixon Ntoka				X			Original PP and wife died 1994/5. PP's sister took over and care of orphan. Strong SP emerging
#25: Lona & Enock Makule			X				Son has taken over as PP
#23: Wilson Chilabikwa		X					Daughter and son-in-law (Pastor Makule) have taken over as PP following death of original PP
#19: Zakeyo Sota		X					PP increased production and has salary. Children returning from town. 1 with retrenchment package which has been invested off-farm. Potential sub-cluster type
#14: Dimas, now Leonard Mainda				X			PP and wife died. Wife's cousin took over; step-daughter of original PP is SP
#7: Noah Mukonki				X			PP has no children. Shifted twice and now on family land. Production decreased because clearing new land
#3: Dishon Chitumbi			X				Watson Chitumbi (son) has taken over as PP from father who is still alive
#10: Elisa Bulaya		X					PP access to FSP. 5 out of 11 children still alive. Orphans being cared for by PP (G/mother). Mother of DC
#18: Balashi Mashinkila							Disintegrated. No replacement cluster emerged as children based in urban area.
3b Summary: Of the original 9 clusters: 3 have remained stable. 2 have improved their status due to the investment of retrenchment packages and access to draught power. One cluster has disintegrated as the remaining family members are based in town. Three clusters have deteriorated. While these have been affected by deaths and high dependency ratios, new PPs are emerging.							

Summary of Changes in Cluster Classification, Mpongwe							
Cluster type 4a	2	3a	3b	4a	4b	4c	Comments
#34: Maybin Malaya				X			PP has lost his livestock due to corridor disease
#31: Daniel Kafweni						X	Former PP shifted to his in-laws, leaving his elder brother as PP and a large number of female headed households
#27: Dabby Ndhlovu		X					Son has now taken over as PP with high production, and ensures cluster staple security
#13: Mandala		X					Father from 4a to type 2. Rest of cluster now 3a. Few intra cluster resource exchanges
#11: Lottie Chifutumba				X			No change in PP
#20: Elena Shitima, now Wedson Shilini		X					Son is now PP with high production, but large number of dependent FHH (sisters) with orphans
#24: Elima Kampanga				X			Could be 3b type but vulnerable due to illness of Bibiana
#16: Philemon Mano				X			PP still at same status although this is the most AIDS affected cluster with a total of 12 deaths, 9 likely HIV/AIDS related
Summary: Of the original 8 clusters in this cluster type 4 have remained 'stable'. 3 clusters have improved their production and staple security due to a son assuming the role of PP. In this cluster type, no clusters have deteriorated.							
Cluster type 4b	2	3a	3b	4a	4b	4c	Comments
#29: Mushili's					X		Nephew of the former PP, a widow who has died, has become the new PP
#22: James Banda			X				PP now bought oxen and production increasing. Majority of deaths in town and orphans remained there.
#15: Marie Matalo						X	High dependency ratio
#5: Mutwale Ndeke						X	Original PPs (sisters) have died from old age. Production has slumped. Sons returned to village as they know that Father is about to die. No food, doing piece work.
#2: Mandikona Kapenda				X			Emerging younger PP, son of Mandikona's younger sister
#1: Luka Mpatisha			X				PP died and wife shifted. New PP (grandson) with higher production, but younger than other male producers
Summary: Of the 7 original clusters 2 have remained stable. Three have improved their status, due to younger PPs emerging. 2 clusters have deteriorated, affected by high dependency ratios and multiple deaths in 2004, and uncertain transition to new PP.							

Cluster type 4c	2	3a	3b	4a	4b	4c	1.1.1 Comments
#8: Meria Kambilo		x			X		The PP Hendricks is 3a, but does not assist the rest of the cluster members.
#6: Jestina Malaya				X			PP died in 2000. Daughter is PP. Cousins come in rainy season to cultivate. SP coffee picker. Higher level of production, but vulnerable depending on health of PP.
#30: Kateta's						X	PP died in 1997, Wife amputee. Daughter taken over as PP. Sorghum plays an important role in staple security
#12: Loshita Makayi					X		PP, a widow, died in 2004, and her younger sister and husband have become PPs
Summary: Of the four original clusters in this category, 3 have improved their status, with new PPs emerging, and in one case, urban based family returning to cultivate during the rainy season.							

Cluster 3a summary: Of original 7 clusters: 3 have remained the same cluster type. One has improved its production and staple security. Two clusters have split, which has led to a decline in production and SS for those that remained in the original village.

Cluster 3b summary: Of the original 9 clusters: 3 have remained stable. 2 have improved their status due to the investment of retrenchment packages and access to draught power. One cluster has disintegrated as the remaining family members are based in town. Two clusters have deteriorated. While these have been affected by deaths and high dependency ratios, new PPs are emerging.

Cluster 4a summary: Of the original 8 clusters in this cluster type 4 have remained 'stable'. 3 clusters have improved their production and staple security due to children assuming the role of PP. In this cluster type, only one cluster has deteriorated.

Cluster 4b summary: Of the 7 original clusters 2 have remained stable. Three have improved their status, due to younger PPs emerging. 2 clusters have deteriorated, affected by high dependency ratios and multiple deaths in 2004, and uncertain transition to new PP.

Cluster 4c summary: Of the four original clusters in this category, 3 have improved their status, with new PPs emerging, and in one case, urban based family returning to cultivate during the rainy season

Annex 2b: Summary of Changes in Cluster Classification, Teta

Name	Old	New	Comments
1. Gertrude Chisenga	3	3b	#1 and #2 are separate clusters but they are kin related. Gertrude uses 50kg bags of fertilizer and hires pieceworkers. There is some labour exchange between Gertrude and sister Lister (who is in CS#2) and food exchange when necessary.
2. Watson Sosola	3	3b	Uses hand-hoe and pieceworkers. Purchases fertilizer. Would hire oxen if available
3. Loveness Nkandu Laston Mangane (Father) Binwell Nkandu (brother)	3	3b	After the 1993 study Binwell moved to establish his own village, and Loveness moved there and died there. The cluster remains as one but is now geographically separated. They still share some resources: the care of an orphan, Gift. Binwell provides labour for father. Binwell is SP2 after Harold.
8. Moses Chisenga (lost)	3		Not traced: relatives or former land
9. Miselo Tayali	3	4a	In 1993 was marginal cluster type 3, as had retired with lump sum. Now hand-hoe, family labour. 2002/3 & 2003/4 fertiliser from PAM; 2004 : reduced to 10kg fert.
10. Paul Ngosa	3	4a	No longer access to draft power; moved to m-in-law; garden important.
15. Alice Chibale	3	3a	Maintained status: oxen died but managed to replace, through remittances from town based children
17. Eliza Mwape	3	4b	SPs less food secure. Hire out as p/w. Care of orphans.
18. Patrick Muleba	3	3b	Lost oxen; ha under mz gone down; hire piecework, m/g for fertilizer, small-stock, fish pond and bee-keeping
4. Gosheni Chibuye Green Chibuye (father)	4a	4a	No fertilizer use, no hire of labour. Goshen in Lusaka; Green is PP
5. Emily Changwe Father to Boston Makumbi	4a	4a	Rabson upcoming PP. Garden production important.
6. Ruth Mwenge Uncle remains: Boston Makumbi	4a	3b	New cluster based on Uncle. Buys fertilizer and hires p/workers.
7. Eunice Chisenga Where she has gone with her husband 7b: Given Mwenda . 7a: Original land: Liness Bwiinga and Sabina remains 4a.	4a	3b and 4a	Cluster split: Eunice has moved to husband's place, where he is PP, he buys fert. And hires p/workers. At the original village: 7a Mother to Eunice (Liness) remains
11a. Nesta Kunda 11b. Annie Chibuye	4a	4b 4b	Cluster split: Nesta remains with Agnes. Agnes is younger sister (SP) does p/work. FHH cluster. Children send remittances. Mother's house burnt by her brother. Nesta's elder sister Annie has moved out with Nesta's mother to separate village, allocated by chief. No resource sharing between clusters
13. Bess Kalilamoyo	4a	4a	Pharis coming up as PP taking older from aging mother.
12. Charles Kamwengo Ruth Pombolakani	4b	4a	Previous cluster left area and sold the land
14. Adam Chisala	4b	4c	Died leaving widow
16. Felly Mwape Now Mike Ngosa	4b	3b	New PP

Annex 3a: Summary matrix Mpongwe: mortality, morbidity by cluster type

Previous cluster type	Deaths Potential AIDS related			Deaths Other			Chronic Illness			Comments
	PP	SP	Other	PP	SP	Other	PP	SP	Other	
Cluster 3a										
#9		Son				F				Son of SP, aged 31, died of TB
# 17		H+W H+W			Child Child Child					Son and wife of PP both died within a year after lengthy illnesses, leaving 3 orphaned children cared for by the PP (herself a widow); daughter and husband of PP also died of AIDS, leaving one orphan son, cared for by PP. The children were from different households
# 21			Agness?	M+F 2 chrn 2 nd W child		child				Both parents of the PP, the second divorced wife and one of her two children, and two young children of his third wife, all died.
# 26			H+child		M				W	Husband of a daughter of the PP died in Chingola, and a young child. The wife is now chronically ill and living in the village as a dependent, with her other four children. A husband of a daughter of a SP also died, leaving the daughter dependent on her father (the SP)
#28B										The original PP split from the rest of the cluster. His own HH has remained healthy.
#28A				Child child	Child Child					Young children died of HHs that remained in the original village
#32					child					Child died of pneumonia
Cluster 3b										
#3					child				W+baby	Wife and baby of a son of the PP died in childbirth. She was anaemic
#7										No mortalities recorded
#10		H+W + 2 nd W+ child			H+W					A daughter died, then her husband remarried and later died, together with his 2 nd wife and child. AIDS appears likely Causes of death of son of PP and his wife unknown
#14	H+W				son	F				Both the original PP couple died after chronic illness
#18				H						The original PP died and with wife leaving, the village has presently been abandoned, save for a caretaker
#19	sister			F	2 chrn 2 chrn					A sister of the PP died of AIDS whilst in HBC, leaving an orphaned child with the PP.
#23				H	H					The original PP, who was old, died, and his son died of suspected poisoning
#25	child			5 chrn						Limited info on the children of the PP that have died, except stated that one died of AIDS
#33	H+W				H	Child				Original PP died after being ill for 2 years. Had pneumonia etc. His wife left and subsequently died with relatives. The new PP, sister of the original PP has also been widowed.
Cluster 4a										
# 1		H+W		H						The original PP who was old, died, and his wife left to live with relatives. A son to brandina (original PPs sister's daughter) and his wife died after being

										chronically ill.
#2			H Child F Child			Child H				A husband of the original PP's sister's daughter died after a long illness.; her child also died. A child of a daughter of the original PP also died, of fever. A sister in law of original PP's husband died of suicide, and 1 of their children died after 'a long illness' along with one of her children
#4				H+W						The original PP couple, who were both old, died
#5					H+W		F			SP couple who were old died. A sister of the PP died, possibly of liver cancer
#11			M			Child child	M			Brother of the PP died after a long illness.
#13										No deaths recorded
#16	son	W H+W+ 2 children	F F F		M	F? M			2 x F mentally ill 1 orphan	This was the most AIDS affected cluster. A total of 12 deaths were recorded in all, of which 9 at least could have been AIDS. Two daughters of the PP, who had both had several of their own children die, suffered from mental illness. The cluster itself contained a number of orphans. Living members of the cluster bear heavy physical and psychological burdens
#20		H+W			W	Child				Orphaned children from both HHs with deaths remain in cluster
#24			F (TB)	F				F		The village has three orphans in it, and a divorced daughter with 3 children is chronically ill, likely AIDS
#27				F						Mother-in-law died of old age
#31					F + 3 chrn			F		Old PP has outmigrated. Remaining HHs have poor food security (type 4c) and a divorced sister of the new PP has been chronically ill for 2 yrs. She has 2 children
#34				child						Child burned by hot porridge
Cluster 4b										
#15						2 child		child		
#22		H of g/daughter	Son Daughter W+H H+W				W			Many of the children and their spouses of the PP have died of TB/AIDS, but all mainly on the Copperbelt. Their orphaned children have mainly remained in town, but some are with the grandparents
#29			W H+W W+H	W	2 chrn					Former PP, a widow, died in 1997. Three of her children living in Lusaka have all died of TB/AIDS, including spouses, but the younger surviving relatives in the cluster have remained relatively healthy.
Cluster 4c										
#6				W H		H	W son			Former PP, an unmarried mother, died of chronic diarrhoea. The husband of her daughter, the new PP, died of suspected food poisoning. The new PP herself has herpes zoster, and a son suffering from epilepsy
#8				H	H		Mentally ill son			Husband of former PP, who was old, died, then so did the husband of her daughter, the new PP. He had severe headaches for 3 days
#12		W+ son	M - TB	F -TB				W		Former PP died of TB, which she had for over 11 years. One of the SP daughters complains of having demons – has had TB
#12B				Child						
#30				H						Former PP died in his 60s.
Totals	7	21	24	29	28	14	6	2	8	Total Mortalities: AIDS related 52 Others: 71

Annex 3b: Summary matrix Teta: mortality, morbidity by cluster type

Previous cluster type	Deaths Potential AIDS related			Deaths Other			Chronic Illness			Comments
	PP	SP	Other	PP	SP	Other	PP	SP	Other	
Cluster 3										
# 1		H+W		Ch						Both were sick in 1993. Had moved out of Teta before death. Infant death: convulsions
#2					2 Ch					Infant deaths: malaria and swelling of feet
# 3		H+W								Both were sick in 1993. W moved to brother's village in Teta and died there in 2002. Not clear where H died
# 10	W			2 Ch						Husband divorced 2 nd Wife and remarried in 2000. 2 nd W died in 2002 out of Teta. 1 infant died from fits; other child ?
# 15		H+W	D						GD	H+W both sick in 1993. D came home after her H died. She died in 1998. Other D in case study notes states died in 1994, but may have been D10 who died in 1993 of probable AIDS
# 17					M H					Mother of PP (EM), died. Husband of JM, sister of PP. She remains in FHH cluster with high dependency ratio. Moved from 3 to 4b.
#18				2 Ch			H+W			Previous history of STD; persistent night sweats, fever and tiredness. Ch = 16-18 yrs; accidental poisoning and witchcraft.
Cluster 4a										
# 5					H				W	Died of old age. Widow remains. (She was interviewee in 1993, but incorrectly noted as PP) Her brother Laston was cluster head, but now gone to live with in-laws of 3 rd wife. Widow has high BP. Son Rabson Jnr. Is PP.
# 7a			Brother							Came back to die in 1996. Not mentioned in 1993 notes
#11a				Ch						Infant death (g/child of PP): malaria
# 11b					H		W			W = SP in 1993, now moved with elderly mother to another village and is SFPP. She has HBP
# 13		D		Ch						D died 2003. D's husband also died, but no record of him being there in 1993. Infant death: vomiting/diarrhoea
Cluster 4b										
# 16		H								H not reported sick in 1993, died in 1999. W now remarried to polygamist.
# 14		D		H						Son taken over as PP, widow remains in cluster. Now cluster 3b H died from burns. Widow remains in cluster. Now Cluster type 4c. D: AIDS related gyn. problem, father of her children still alive.
			Son							S died in 1998. Not sure if he was present in 1993. He used to work in mines, was retrenched and returned and remarried in Teta. 2 probable AIDS deaths pre 1993
									DP	DP mentally ill
Totals	1	9	3	9	6		3		3	

Annex 4: Summary matrix of agricultural production by cluster, Teta 2003/04

Cluster type 3b

No. of PPs/SPs growing	Crop	Area (ha) (Range)		Source of Fert.	Output (x50kg bags)		Sales 2003/4	Yield (Bags/ha) 2003/4
		1992/3	2003/4		1992/3	2003/4		
PP: 7	Maize	0.4-4	0.25 – 1	? 2-8bags	10.8-293 ¹⁵	8 – 27	3 – 10x50kg	27 – 32x50kg
PP: 7	F/Millet	0.4-1	0.25 – 0.75	N/a	0.9-12.6	0.3 – 5	?	1.2– 6.3x50kg
PP: 2	Sorghum	0.25-1	0.4	N/a	1.8-9	9-10	3bags	18-20x50kg
PP: 5	Cassava	<0.4	0.25 – 1	N/a		?	?	?
SP: 6	Maize		0.125 – 0.5	?(1frm scope) 3gallons – 2bags		4-20	10x50kg	20-32x50kg
SP: 5	F/Millet		0.125 – 0.5	N/a		0.6 –1.8	?	3.6-4.8x50kg
SP:3	Sorghum		0.25 – 0.4	N/a		1.2– 1.8	?	3.6-4.8x50kg
SP: 6	Cassava		0.25 – 0.75	N/a		1+2tins-?	?	?

Note Information on cassava production& sales is very scanty though one of the IGAs in the area. Millet sales are mainly undertaken through the brewing and selling of beer

¹⁵ In 1993, the production range was skewed by Alice Chibale who produced 163 x 90 kg bags

Summary matrix: cluster type 4a, Teta

No. of PPs/SPs growing	Crop	Area (ha) (Range)		Source of Fert.	Output (x 50kg bags)		Sales	Yield (Bags/ha)
		1992/3	2003/4		1992/3	2003/4		
PP: 7	Maize	0.4-2	0.125-1	20kg-2bags, PAM, buy	1.8-48.6	2-19	2-5x50kg	16-19x50kg
PP: 7	F/Millet	0.4-2	0.06-1	N/a	1.8-5.4	0.8-12.5	2x50kg	0.8-12.5x50kg
PP: 1	Sorghum	0.25-0.5	0.5	N/a	1.8-5.4	1.5	0	3x50kg
PP: 7	Cassava	<0.4	0.125-1	N/a	?	4.2 –7	3x50kg	7-33bag???
SP: 3	Maize		0.125-1	? 1-2bags		2.6-15	10x50kg	15-20.8x50kg
SP: 4	F/Millet		0.125-0.5	N/a		2-3	B	6-16x50kg
SP: 1	Sorghum		0.25	N/a		3	1.2x50kg	12x50kg
SP: 3	Cassava		0.25-0.5	N/a		2	3x50kg	8x50kg ???

Summary matrix of Cluster type 4b

No. of PPs/SPs growing	Crop	Area (ha) (Range)		Source of Fert.			Output (x 50kg) Range		Sales (x 50kg) Range	Yield (Bags/ha) Range
		1992/3	2003/4	Cash	MG	NGO	1992/3	2003/4		
PP: 3	Maize	0.25-0.8	0.25-0.625	1		2	1.8-10.8	1- 9.3	0	4-9.3
PP: 1	F/Millet	<0.4	0.5					12.5	1.5	25
PP: 1	Sorghum	<0.125	0.5					6	1.5	12
PP: 2	Cassava	?	0.25					?	?	?
SP: 3	Maize		0.05-0.125	0	0	0		6	?	6
SP: 2	F/Millet		?	N/a	N/a	N/a		?	0	?
SP: 1	Sorghum		0.125	N/a	N/a	N/a		?	0	?
SP: 2	Cassava		0.125	N/a	N/a	N/a		?	0	?