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Mozambique assessment: the Impact of HIV/AIDS on Household Economy

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Nutrition and food security technicians, SETSAN

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Executive Summary

1. This study forms part of a four-country research programme funded by DfID. The overall goal is to develop methods of measuring and analysing poverty and modelling the impact of change at household level.
2. The aim of the Mozambique study was to test the use of individual household economy methods in an area of high HIV/AIDS prevalence; to identify the main factors affecting income levels in HIV affected and non affected households and to explore possible uses of household economy methods in programme design and monitoring.
3. The study was conducted in a rural trading community, in a high potential maize producing area, about 40 km from the provincial capital, Chimoio.
4. Household economy methods were used to describe and quantify the components of household income and expenditure, including food production and employment. Random sampling techniques were applied.
5. Detailed demographic information was collected for all household members, including providers of remittance income. The presence of orphans¹ in a household was used as a proxy for HIV/AIDS². 21% of all households fall into this HIV/AIDS affected category. Orphans make up 8% of the total population.
6. Comparisons were made between the income and standard of living of households across the study population. These were based on comparisons of disposable income i.e. income remaining after the household had met its food requirements. A minimum standard of living was established, including basic needs and primary school costs; the standard was designed to be consistent with international Millennium Development Goals (MDGs). 10 households (approximately 9%) fell below the minimum standard of living.
7. An estimate was made of (i) the cost of supporting orphans as a percentage of household income (see table 2). This ranged from around 7% in the poorest households to less than 1% in the wealthiest and (ii) the effect of the recent drought on household production and living standards. A simulation of a return to non drought maize had only a small effect on total disposable income (4.8% across the community). However, the percentage change in disposable income among some of the poorest households was substantial (fig 8)
8. Analysis of the poorest 10 households (which fell below the minimum standard of living) did not show any single shared characteristics. The proportion of widow headed households was greater than in the population as a whole, although widows are found across the entire wealth distribution. Non of the poorest households was able to meet its food needs from own production and a return to non drought conditions would have a negligible impact.

¹ Orphans are defined locally (and in this study) as children who have lost one or both parents.

² The cause of death was not known definitively; however, adult HIV prevalence in this area is estimated at 21% so it is reasonable to assume that a large number of 'prime age' adult deaths resulting in orphans can be attributed to HIV/AIDS

9. This study provides quantitative information that could be used to guide policy and interventions and to estimate the investment costs of raising living standards. As the causes of poverty vary considerably, individual case work is also needed to match assistance to household needs and capacities.

A rural trading community in Manica province, Mozambique: the Impact of HIV/AIDS on Household Economy

1. Background:

This work was part of a DfID funded programme of research on the theme: 'measuring and analysing poverty and food security.' The Mozambique study was the last of the four country case studies to be undertaken. Its objectives were

- to refine and test the use of individual household economy methods as a means of understanding poverty and food security, in a peri-urban area of high HIV/AIDS prevalence and
- to identify the main characteristics of household poverty and wealth in the study area, to better understand the range of capacities needed to withstand the effects of HIV/AIDS and other shocks

The analysis is also intended to support interventions aimed at reducing vulnerability and increasing children's access to basic developmental needs and rights.

The relationship between HIV/AIDS and food security has been widely discussed, particularly in the light of the southern Africa food shortages of 2001-2. However, despite the fact that HIV/AIDS is now seen as a dominant factor influencing development in Africa, little progress has been made in understanding the micro economic effects of the epidemic. *This is partly explained by the lack of household level studies, including studies that monitor change over time

The work was carried out in a bairro on the edge of a trading and administrative centre in Manica province, about 40 km from the provincial capital, Chimoio. The study site adjoins the district capital, Sussundenga, and was effectively joined to the administrative centre during the post-independence war (1980-1992). Sussundenga district has a border with Zimbabwe to the East, and is located on the 'Beira corridor,' which links

*There is an extensive literature on HIV/AIDS and food security links (see Paul Harvey, ODI 2004 for a recent review). Field research efforts have tended to search out indicators such as

Mozambique's coastal port of Beira with Zimbabwe. Reported adult HIV prevalence in the area is around 21% *.

Household economy methods were used to analyse the impact of various changes on disposable income and living standards. 'External' changes included changes in climatic conditions and labour availability; 'internal' changes included changes in household demography.

The main partners in this research were SC UK, SC Norway and Kubitsirana, a local community based organisation. Kubitsirana has recently started a programme of assistance targeting HIV/AIDS affected households in the area, and was interested in using the findings of the report to inform its programme.

Data was collected that enabled us to:

- establish a picture of the current demographic make up of households in the community and to document recent changes
- describe and quantify household access to food and income, and the main items of household expenditure, using a range of key informant and individual household interviews.
- identify the main characteristics of poor and better off households

Using this information, we aimed to:

- (i) Estimate disposable income in a representative sample of households
- (ii) Define a poverty line (i.e. minimum living standard), consistent with poverty reduction objectives and millennium development goals.
- (iii) Identify households currently falling below the poverty line
- (iv) Assess the effects of defined economic changes on disposable income and living standards. The economic changes we have selected include the ability to care

dependency ratios, changes in land under cultivation etc, as proxies for HIV impact (see SADC, Regional Vulnerability Assessment Committee papers 2003)

*Mozambique Ministry of Health, Technical Group on HIV/AIDS 2001

for additional orphans joining the household, and the effects of the recent drought.

In this study, changes in household income resulting from the death of a 'prime age'* adult were not analysed in depth. However, the three case studies in section 8 suggest a wide variation in the capacity of households to adapt to change, based on the assets and skills of surviving household members**

In addition to providing information that could be used by Kubitsirana in its programme of interventions, it is hoped that this work will also be useful to the Food Security and HIV working group within SETSAN (Mozambique's Food Security and Nutrition Secretariat).***

By building the capacity of local agencies to undertake individual household assessments, the longer-term aim is to increase the ability of professionals working in the area of food security and nutrition, to make detailed assessments of vulnerability and to use this information in planning more effective interventions.

The study site was selected by SC Norway, which works with local community groups assisting households affected HIV/AIDS. Criteria for the selection of this site were that:

- Existing programmes had already identified households in which children had lost one or both parents
- Access to affected households could be negotiated through the local community based organisation
- There were no overwhelming logistical or other constraints that would prevent household level interviews being conducted among a wide cross section of the community

2 Description of context

*ie potentially the most economically active age range, around 20-45 years

**assets include social connections/capital

***SETSAN is a multi-sectoral institution and is linked to various policy initiatives across the Ministries of Agriculture, Health, Planning and Social Welfare etc.

Mozambique is one of the world's poorest countries, with nearly 70% of the population living under the \$0.40 day poverty line. Mozambique's economy is overwhelmingly agricultural. Around 82% of the economically active population is involved in the agricultural sector, where production is limited by many factors including poor access to agricultural inputs, low levels of irrigation and high transaction costs. Mozambique has a small export base, made up chiefly of agricultural products (prawns, cotton, cashews etc) and minor quantities of minerals. External debt levels were extremely high throughout the 1990s. However, under the HIPPC agreement, Mozambique's external debt has been reduced from \$US 6 billion to \$US1.7 billion. In 2000, official development assistance was \$74 per capita.

Inflation rates are low (around 1% from around 50% in 1995). The exchange rate in 2002 was 23,678 Mts /US\$. Following a 20 year civil war, reconstruction through the 1990s has resulted in annual growth rates of around 8%. However, 21% of rural women marry or have their first child between 12-15 years, and despite recent improvements in macro economic indicators , Mozambique remains an extremely poor country *

2.1 HIV/AIDS** :

An estimated 1,600,000 people in Mozambique are living with HIV/AIDS and, according to recent appraisals, between 500-700 new cases occur every day. Over 60% of new cases are women; 45% of all new infections occur in people below the age of 24, and 23% of them in children under 5. Latest figures (2002 HIV surveillance data) estimate a national adult HIV+ prevalence of 13.5%, with the highest prevalence along the main transport corridors, border areas and large cities.

In 2001 the number of orphans in Mozambique (due to HIV and other causes) was estimated to be 1,274,000. This figure is predicted to rise to 1,820,000 for the year 2010.*** It is estimated that almost 60% of these children will be orphaned due to

*According to UNDP figures, Mozambique is 157 th out of 162 countries -ie the world's sixth poorest nation

**See Oxfam Contextual analysis of HIV/AIDS in Mozambique Charmaine Della Vedova, Maputo May 2003

***'Children on the Brink 2002', UNICEF/UNAIDS/USAID, July 2002

HIV/AIDS. Manica province, where the study was carried out, has a reported adult HIV prevalence rate of around 21%; this is the highest rate in the country.

Funding for HIV/AIDS prevention and treatment has been pledged under various international programmes* and a number of government policies and guidelines, including the provision of Nevirapine to prevent mother to child transmission, are in place.

3. Background Information on the study area: Sussundenga

3.1 Geographical Location: Food economy zone

Sussundenga district is situated in the east of Manica province (central Mozambique), near the border with Zimbabwe. The area is approximately 7,060 km² and with hilly terrain between 600m and 800m altitude. The east of the district which borders Zimbabwe has peaks of up to 1,500m.

3.2 Rainfall

Rainfall is between 600mm to 1000mm on the plains, and somewhat higher in the mountains. The average annual temperature is 22 degrees. Summer temperatures range between 22-27 degrees, and winter temperatures between 15-20 degrees.

3.3 Soils and agriculture

The main characteristics are:

- Good clay soils with high agricultural potential.
- Potential for rain-fed agriculture and animal traction.
- Very low use of chemical pesticides or fertilizers. Farmers mainly use manure for fertilizer.
- Rain-fed maize and sorghum has the potential for 5-8 metric tonnes per hectare.

3.4 Agriculture pre independence

*Mozambique is due to receive \$64m over 5 years from the World Bank under its Multi Country Aids Project-including health service development; funds are also due under the Global AIDS Fund (Integrated health network: HIV/AIDS prevention and care: VCT; PMTCT, treatment of Opportunistic Infections) and under the Clinton Foundation (HIV/AIDS treatment and care) proposals

There was a significant commercial farm sector in Sussundenga pre-independence, which existed alongside the family sector. The commercial farm sector was run/owned by the Portuguese colonial power. The commercial farm sector occupied an estimated 100/200 ha in the fertile lowlands of the district.

3.5 After Independence

In 1978 the government introduced a policy of communal villages, where households were moved to settlements in which schools, clinics and administrative facilities were provided. The majority of the villages were created between 1979-1982. The study site, 'Bairro I' * was one of the existing villages close to the centre of Sussundenga that was formalised during villagization. On the edge of Bairro I the government formed a state farm from the colonial plantations. A village of farm workers was established, which was absorbed into the settlement.

3.6 Population of study village 'Bairro I'

In 1992 the population in Bairro I was 4,500. At this time, the security situation was still tense with people living in the north of the settlement (beyond the school) but sleeping in the centre or the south at night. In 1992 the villagization process officially ceased, although effectively it had "lain fallow" for many years during the war. Since then, the population has decreased to 2,761 and many of the wartime displaced have returned to the rural areas.

The state farm also ceased functioning during the war. Around 1990 the government began to encourage private farmers to invest in the state farmlands. However, the situation was complicated by the fact that during the war peasant farmers had begun to farm on the state farm lands as this was close the district centre and therefore relatively safe.

Bairro I is now one of the administrative divisions (bairros) of Sussundenga, the district centre, and stretches along the road into the centre, linking Chimoio to Sussundenga.

3.7 Demography and Social Organisation

*Bairro I is an assumed name

Since the end of the war, the population of the settlement has decreased to around 2,760, although there appears to be a steady flow of people moving both into and out of the community. Some of the reasons that people gave for moving there were explained as: to be close to other people; in order to go to school; and because of the economic opportunities.

Unlike many rural districts in Mozambique, Sussundenga is attracting young people because of its secondary school and the possibility to study at night. Elsewhere there is widespread out-migration of youth seeking opportunities in larger towns or across the borders in South Africa or Zimbabwe.

There are many polygamous marriages in Bairro I. Generally, in this area, wives will not live in the same houses, but they will contribute labour to the husband's land as well as having their own land to farm. We came across varied marital arrangements; some were extremely amicable, where the women lived as close neighbours, shared income generating activities and had no complaints about the division of the husbands labour or time. However, other situations were not as amicable, with women living alone, while the husband's income was channelled into the second or third wife's household. People were open about polygamy and willing to discuss the merits and problems of the situation.

Some households are also caring for orphaned relatives (see section 9, results). In situations where there are no other alternatives (for example, grandparents capable of providing care and shelter) it is generally the case that girls are taken in by members of the mother's family and boys by the father's family.

3.8 Infrastructure (roads, telecommunications, electricity)

Bairro I has good road communications to Chimoio, the Zimbabwe border, and other parts of the province. The town of Sussundenga has a good electricity supply, although this does not yet extend to all parts of the wider settlement. There is also a local radio station and a 'tele' centre which has computers and internet access.

3.9 Access to Social Services (education, water, health)

Annual charges for primary education range from 5000 Mts to 30000 Mts. The matriculation fee can be waived if the family presents a poverty certificate, although there are various other charges associated with school attendance. These are very small, rising from 5,000 Mts (around USD \$0.20cents per year) to 30,000 Mts for older students (USD \$1.20 per year). The main expenses are for exercise books and pencils. Secondary pupils need to buy or borrow books. This can amount to 100,000 Mts to 150,000 Mts (USD \$3-\$7). Education has been prioritised by the government and spending on education amounts to around 18.4% of the state budget.

The bairro has a good supply of pumped water, and residents have access to the district health centre.

3.10 Landholdings and land tenure

Households in Bairro I have a variety of landholdings, reflecting the complex settlement history of the area. Land changes hands through two systems.

- (i) Official leasing of land through the administration with the permission of local communities (normally large land holdings for commercial farming).
- (ii) Requests for land from local leaders for family sector farming. This is given to newcomers and recently formed households with no land, by the community leaders and does not pass through an official land titling process.

Households farm two types of land, rain fed lands and lowlands/mdimba (i.e. small plots adjacent to rivers, suitable for vegetable growing)

Farms are located:

- Close to the bairro (less than half an hour's walk). This often includes mdimba land , and makes up a smaller proportion of the total landholding.
- Adjacent land on the state farm land that was occupied by the peasant farmers during the war. (Much of this is now being reclaimed by the government and leased to Zimbabwean farmers for tobacco farming)

- Land that is about an hour's walk from the area (close to the mountains and river). This usually includes some mdimba land
- Land that is at least three hours' walk (or a bus ride away). This is located in one of the old settlements that people have now left to live permanently in Bairro I.

3.11 Main sources of food and cash income

A full account of crops and livestock production is given in Annexe 2

3.12 Food Sources

In a normal year the majority of the population of Bairro I would expect to feed themselves from their own production of maize, beans and other crops such as millet and sorghum, and also sell part of the maize harvest for cash. As the market is regular and access is good, some households may sell a large part of their production with the knowledge that they can buy back later in the season.

Second season harvests normally yield cash crops such as vegetables that would be consumed and sold. This year, due to the on-going drought, many farmers planted maize in the lowlands in order to add to their low or non-existent food stocks.

The area has an adequate food market with cereals, beans, groundnuts, vegetables, oil, sugar, dried fish and meat sold year round. Households expect to buy fish, meat, sugar and oil to supplement the diet throughout the year.

Foodstuffs come from the surrounding rural areas and from the city of Chimoio.

3.13 Income sources

Both men and women are engaged in income generating activities. There is some gender division in some activities. Women are brewers and men are brick-makers and builders. Both men and women are petty traders and farm labourers.

3.14 Farm labour

There are seven commercial farms in the area surrounding Bairro I, where both men and women are offered seasonal and year round farm labour work. The pay is below minimum wage rates set in the country. People were generally positive about the possibility of younger members of the community obtaining salaried work in the area.

There appeared to be little demand for farm labour on family sector farms. People generally farmed their own land and would only occasionally hire labour during peak times (land clearance and weeding). Harvesting was normally carried out by family members.

During the survey, some households with medium level farms and high cash crop production were interviewed. These households would employ small numbers of permanent farm labour, generally for a wage much lower than the commercial farms. The farm labourers also worked on their own farms.

3.15 Sale of Surplus Crops

In a normal year, households sell maize, beans, groundnuts and vegetables.

The past three agricultural years, including 2002-2003, (the year documented in this study) have been badly affected by drought. Farmers and the local agricultural extension agency, estimate that maize crops in 2002 were up to 30%-50% below normal.

3.16 Non Agricultural Income Sources

These include

- Brewing
- Brick-making
- Charcoal sale
- Paraffin sale
- Petty trade in vegetables, root crops, fruit (especially bananas)
- Stalls selling basic necessities
- Skilled labour – welding, building
- Millers
- Public service: teachers, police, health workers and administrative workers.

There is no other full time work except for farm labour

3.17 Recent changes in access to cash income

Most of Bairro I's population is involved in cereal production, although the use of inputs and animal traction is low. The combination of local public sector employment in Sussundenga, proximity to Chimoio and a normally sound agricultural base provide a range of opportunities in petty trade, building and construction. In the bad agricultural year we looked at in this study, monthly salaries protected some of the better off households from the worst effects of poor harvests.

3.18 Importance of Formal employment

The importance of formal sector employment is shown in the results section (section 7, Figures 5 and 6). Recent decentralisation policy has resulted in an increase in the teachers and other public sector employees in the districts, reflected in the number of teachers, policemen and health workers living in Bairro I, and which accounts for 26% of employment in the community .

3.19 Improving the environment: short-term pain, long term gain?

There was evidence that recent environmental regulation in the area is beginning to change some household livelihood options. In particular, people spoke about the livestock by-laws (corralling outside of the residential area) and a ban on excavating for brick-making within the bairro limits that is soon to be introduced. New licensing laws mean that brick makers will apply for a formal license and that areas outside the village have been designated as excavating sites. Many people fear the bureaucratic processes and this may result in a decrease in households using this strategy for income generation.

3.20 Factors affecting household income and food security in the study area

Households in Bairro I have access to a more varied set of opportunities, than in many other parts of Mozambique. This includes both employment and income generating options, and the opportunity to develop higher level knowledge and skills.

Food Security leverage points include:

- Proximity to Chimoio (potentially Zimbabwe) : Market accessibility

- Secondary school (adult and child education) and a telecentre*
- High agricultural potential (family sector and commercial farming)
- (potential) fishing in the artificial lakes
- Variety of trade skills
- Economy fed by rural hinterland and urban Chimoio
- Emerging legislative framework

Food Security constraints include:

- Low use of agricultural in-puts and shortage of investment capital
- Lack of information and confidence in emerging legislative framework
- Weak implementation of labour laws for agricultural labour
- Food processing (drying, pressing etc) not available /known about

4. Field work: Assessment methods

4.1 The assessment team

Field work was carried out over a period of about 18 days. The team included 2 lead HEA trained practitioners; 4 members of SETSAN and one member of SC UK who had prior experience of household economy approaches. A senior member of Kubitsirana and a community worker joined the assessment and provided important information and support; SC UK HIV/AIDS project manager was also present for part of the study. FSLU London provided training and overall supervision in the first stages of field work.

Information was obtained from a range of key informants, secondary sources and a representative sample of individual household interviews.

Prior to the field work, the lead consultant (KS) visited Chimoio to explain the purpose of the work, and held initial meetings with partners.

4.2 Preliminary field work

The following information was collected before household interviews were carried out:

* The telecentre includes a local radio station and a computer training facility with 3 or 4 PCs. The centre is currently donor funded and charges fees for computer training at a subsidised rate. These would need to rise substantially if it were to become self-financing.

(i) A comprehensive list of all crops and all livestock and their uses was compiled from interviews with farmers, (including men and women from different economic groups) and with a local agricultural extension officer.

(ii) For each agricultural activity, information was obtained on:

- Seasonal agricultural labour requirements (including the labour inputs for each task, for a defined area of land)
- The costs of all crop and livestock inputs (land, labour, fertilisers and pesticides, veterinary services etc); the yields expected at different input levels; and details of seasonal prices.

(iii) Types of employment. For each type of paid employment (including salaried and self employment) information was obtained on the amount of labour typically available for each type of employment (days per month), seasonal variation in this, wage rates, and the requirements (age, gender, skill or qualification) for employment.

(iv) Market information, including information on how the maize market operates. This was obtained from key informants and the secondary literature.

(v) Information was obtained from key informants on formal and non-formal means of accessing credit.

(vi) The social and economic context. To gain further understanding of wider issues affecting household economy, including the impact of HIV/AIDS, interviews were conducted with members of Kubitsirana's local committee. These focussed on questions of land tenure and inheritance, care of children affected by HIV/AIDS (i.e. who in the extended family is normally considered responsible for supporting orphans), the availability of external NGO and government support etc. A list of orphans recently drawn up by Kubitsirana was provided.

Other changes, including the availability of employment, changes in land availability and employment opportunities in the commercial and government sector were also discussed with key informants

(vii) A map of the community was made with OVC members and community leaders. Households were already divided into zones for administrative purposes. Each household and the name of the household head marked, to assist in the location of households for sampling purposes, (which was carried out by zone).

Questionnaires involving information on household demography and recent changes were drawn up in close consultation with Kubitsirana, and efforts were made to ensure that the necessary information was gained in a way that was acceptable to respondents.

5. Interviews with individual households

The study population is made up of 512 households, divided for administrative purposes into five zones. We covered 20% of all households in each zone. Two samples of households were drawn, one for long interviews and one for short interviews. Long interviews provide an account of all sources of household income (including production) and all items of expenditure. Short interviews are restricted to household income (including production).

5.1 Long interviews. 32 long interviews were conducted. Long interviews (which typically take about 2 hours) used standard semi-structured interview techniques *, to obtain a detailed account of land holding and cultivated land, household membership, changes in household membership in the past 3 years, a household budget (food and cash income and expenditure) and assets (land, livestock holding and items such as bicycles). In each zone, long interviews were conducted with every 17th household

5.2 Short interviews. 75 short interviews were conducted **. Questionnaires for the short interviews (which took approximately 25 minutes) were designed after the long interviews were completed, to ensure that a reliable estimate of all household income sources was established. Short interviews also included details of land ownership i.e. potentially cultivable, and the area cultivated in the study year. In each zone, short interviews were conducted with every 7th household.

*See 'The Household Economy Approach', (Seaman J et al SCF UK 2000)

**1 interview form was rejected due to obvious errors. 74 short interviews were used in final analysis.

Information in both the long and short interviews was collected with reference to the period April 2002-March 2003, which was the most recent complete agricultural year. The context is one of two consecutive years of poor agricultural production

6. The analytic approach

The overall aim of the analysis was to identify the main determinants of income levels across the community and to ascertain any differences in households with orphans and households without orphans *. The first stage in the analysis was to rank households according to their current disposable income and to identify households falling beneath a defined standard of living. Further analysis could then be carried out, using techniques described in section 7.

Definitions and terms

6.1 Disposable income

The results of the analysis have been presented in terms of household disposable income, defined as the money per year remaining to the household, after their minimum food needs have been met.

The minimum household food need is calculated as the sum of the food energy requirement of each household member. The requirement estimates used are those given by WHO (1995) by age and sex for a population of a developing country. As many households produce less food than they consume, any household food needs not met by household production is met by the purchase of maize at the price prevailing in the study period (Mts 2,000/Kg): the cost of any maize purchase is subtracted from the household's money income **. For example, a household with a requirement of 1000kg

*We use the local definition of an orphan i.e. a child who has lost one or both parents. As we do not know the cause of death of the parent, 'orphanhood' is used as a proxy for HIV/AIDS. However, it should be remembered that HIV/AIDS accounts for just under 60% of Mozambique's orphans (Children on the Brink, op cit, 2002). The remaining 40% have lost their parent/s for other reasons; for some older children, this will include death of parent/s during the war which ended in 1992. A cut off of under 17 years has been used in defining dependency ratios, as in this community it is the age at which young people begin to make a more substantial contribution to household income. For consistency of analysis, the same cut off has been made in identifying orphans. Using 18 years as the cut of does not alter the overall analysis or conclusions

**Only maize has been used as this approximates the poorest diets. Richer households would purchase a greater range of foodstuffs.

maize/ year to meet its consumption needs, which cultivated 400kg maize/ year for consumption, and had a cash income of Mts 4,000,000/ year from employment would be calculated to have a disposable income of: (Mts 4,000,000 - (cost of 600kg maize, i.e. Mts 1,200,000)) = Mts2,800,000/year.

6.2 'Adult equivalents'.

To ensure the comparability of disposable income between households, results have been standardised in terms of 'adult equivalents'. The number of adult equivalents = the total annual household food energy requirement / average (male and female) annual adult energy requirement.

6.3 The standard of living.

A minimum standard of living has been defined as the ability of a household to meet:

- basic household expenses i.e. kerosene/candles/, matches, and household utensils and blankets.
- personal expenses i.e. clothing, soap and medical costs.
- primary school costs i.e. school fees, uniforms and books.

The cost of these items is based on the costs reported in the long interviews. Basic household costs were calculated at 630,000 Mts; personal expenses at 31,000 Mts; and primary school costs at 20,000 Mts per child per year

As demographic composition varies between households, the cost has been calculated for each household separately as: household costs + (personal expenses * number of people in household) + (number of primary school age children * cost child). Primary school age has been taken as from 7 years to 14 years of age.

This approach approximates the efficiencies which larger households may enjoy in the consumption of some items (e.g. a larger household is likely to spend less / person on fuel for household lighting and utensils) and the higher cost associated with personal expenditure and school fees in larger households.

Comparisons between households are therefore in reasonably common terms. Minor approximations aside, the only specific omission is the difference in the food quality (nutrient composition) of food grown by each household for its own consumption. As maize accounted for almost all production in the reference year this difference is likely to be small.

7. Findings and Analysis

In this section, we describe the results of the analysis, which includes a population breakdown of the study community (including orphans); sources and levels of household income; and the distribution of wealth within the community. In section 8, we describe the pattern of livelihoods in three case study households recently affected by a 'prime age' adult death. Finally, in section 9, we discuss characteristics of households with high levels of disposable income and those with low disposable income, and the implications for poverty reduction arising from this. This analysis also provides a basis for understanding the consequences of HIV/AIDS in terms of, for example, the impact of additional orphans joining a household and the characteristics of households that are most able to adapt and compensate for the loss of an economically active adult. It sets the context for discussion of the particular welfare, protection and livelihood interventions that might assist individual children and households most effectively.

Overview of results: Population, sources of income and living standards

7.1 Population

Figure 1 (Population Pyramid) and Table 1 (Population Categories) show the number of individuals in the village population, grouped by one-year divisions from birth to 79 years. There are no residents with reported ages over 79 years * and fairly low numbers of adults over 50 years. This may be due in part to the protracted civil war, which claimed many lives in this area, and partly to the post war return of older people to rural areas.

There were very few child-headed households in the area due to the death of parents or abandonment **. There were a number of elderly-headed households where younger children were living with grandparents. This was due either to the death of parents, or to parents leaving children to attend school in Sussundenga, while they farmed in rural areas or were employed in Chimoio (schooling places are more expensive and more difficult to find in the towns).

For each sex the population has been divided into four groups: Resident, Orphans, Part time Resident and Temporary Resident. Part time Residents include household members who are employed outside the community (typically in Chimoio town, working as drivers etc). Temporary Residents include people who currently live as household members (eg relatives, maids etc) but who will not necessarily remain in the household on a permanent basis.

* The reported age of older residents may only be approximate

**There were some households in which older children were living together and attending school. These households had been set up by parents and supported with monthly remittances.

Fig 1

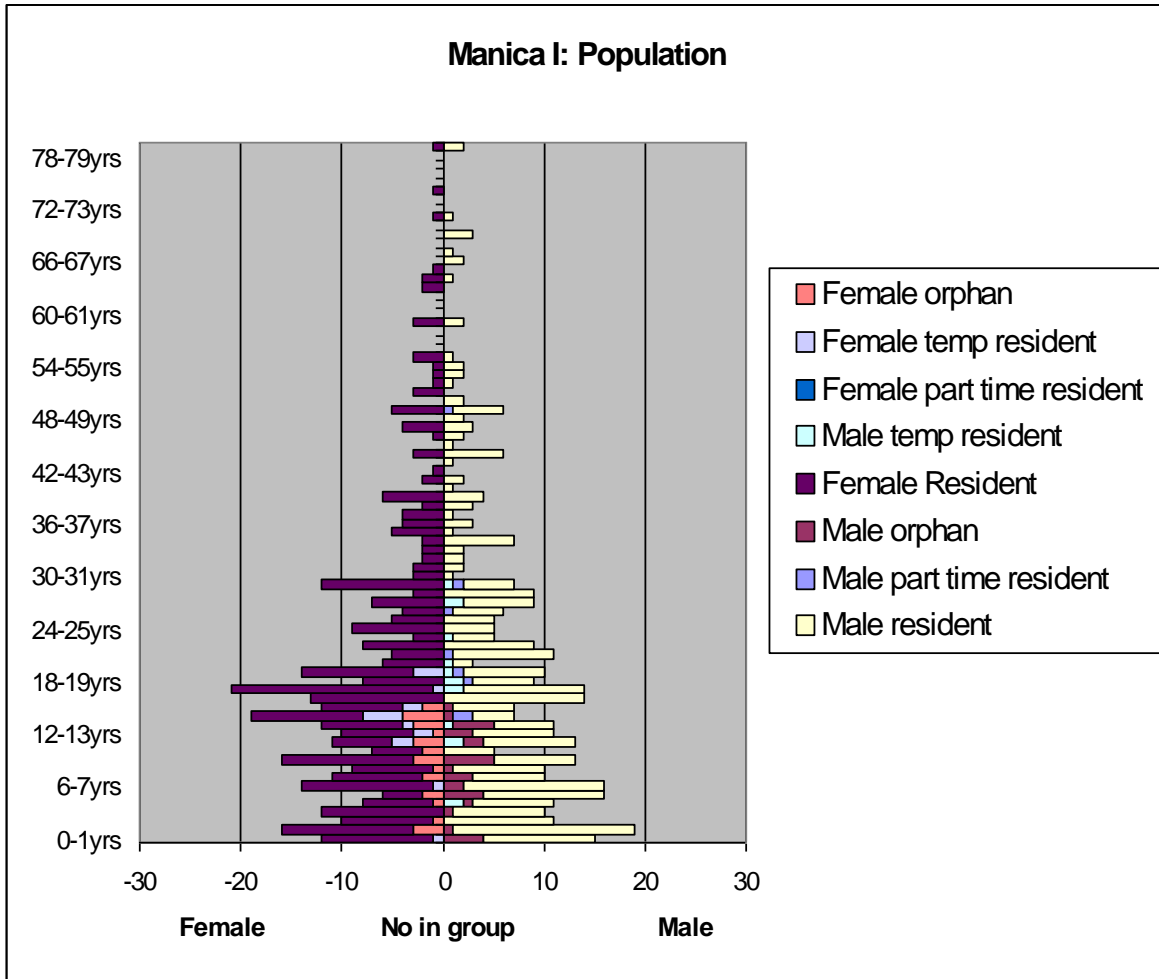


Fig 1 Populations Pyramid

Table 1 Population Categories

| | Male | Female | Total |
|--------------------|-------------|---------------|--------------|
| Resident | 315 | 327 | 642 |
| Orphans | 33 | 28 | 61 |
| Part time resident | 8 | 0 | 8 |
| Temporary resident | 15 | 17 | 32 |
| | | Total | 743 |

Table 1*: ‘Orphans’ are defined as children under the age of 17 years who may have lost one or both parents (see footnote on dependency ratios). Orphans make up 8% of the entire population of the community. There is an approximately equal number of male and female orphans.

Table 1**: ‘Part time residents’: In calculating the disposable income of each household the expenses of ‘part time’ residents have been allocated according to the time which they spend at the household (ranging from a few days each year to every weekend).

Fig 2 shows the dependency ratio, calculated as the ratio of children of 16 years and under: people over 16 years *. Households ‘with orphans’ are shown in red. Orphans are distributed fairly evenly through the population, although a disproportionate number fall into the poorest 10 households (see fig 3, Disposable Income). The difference is statistically significant (Chi-squared, $p < .01$, 1 dof).

Eight of the households ‘with orphans’ (Fig 2) were hosting ‘in-coming’ orphans i.e. children who had not been part of the household before their parent/s died. The number of ‘incoming orphans’ ranged from 1 to 4 per household. The cost of meeting each additional child’s basic needs (including primary education) is 51,000Mts. The impact on overall household income in the host families was as follows:

*17 years was identified as the age at which young people are likely to become economically active

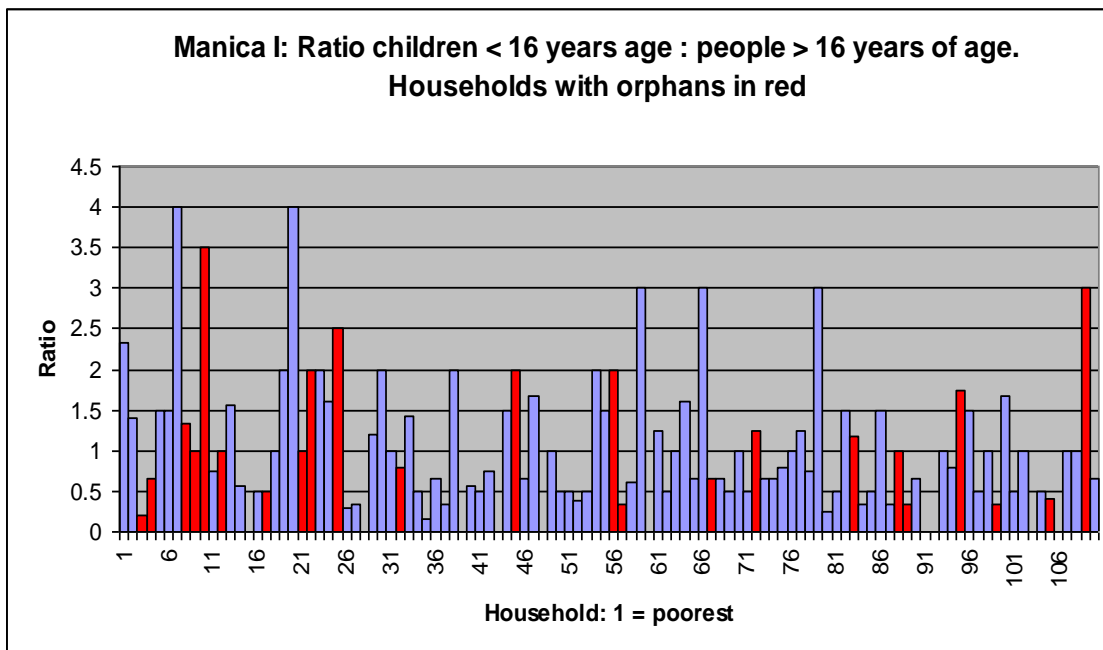


Fig 2 Ratio of children < 16 years: people > 16 years. Households with orphans in red

Table 2 Cost of taking in orphans, as a proportion of actual household income in eight host families

| Poorest----- | | | | -----Wealthiest | | | |
|--------------|------|------|------|-----------------|------|------|------|
| 6.2% | 6.7% | 7.4% | 1.4% | 1.5% | 1.7% | 0.3% | 0.2% |

Although the money costs are not high (around US \$3 per head) in very low income families this will have a noticeable impact on overall household budget.

7.2 Disposable income and the standard of living

Figure 3 shows household disposable income per adult equivalent, across the population studied. This is a measure of the cash remaining after household food costs have been met (para 8.4). Results are arranged in ascending order of disposable income. Households that fall below the defined minimum standard of living are shown in red. Figure 3 also reveals the very marked polarisation of income. 49.9% of village disposable income is held by the richest 10 households i.e. households with the greatest disposable income per adult equivalent.

Ten households (i.e. around 9% of all households) fall below the defined poverty threshold. This is under half the poverty rate found in a Highveld Swazi village (23%) for the same living standard (see the accompanying Swaziland study).

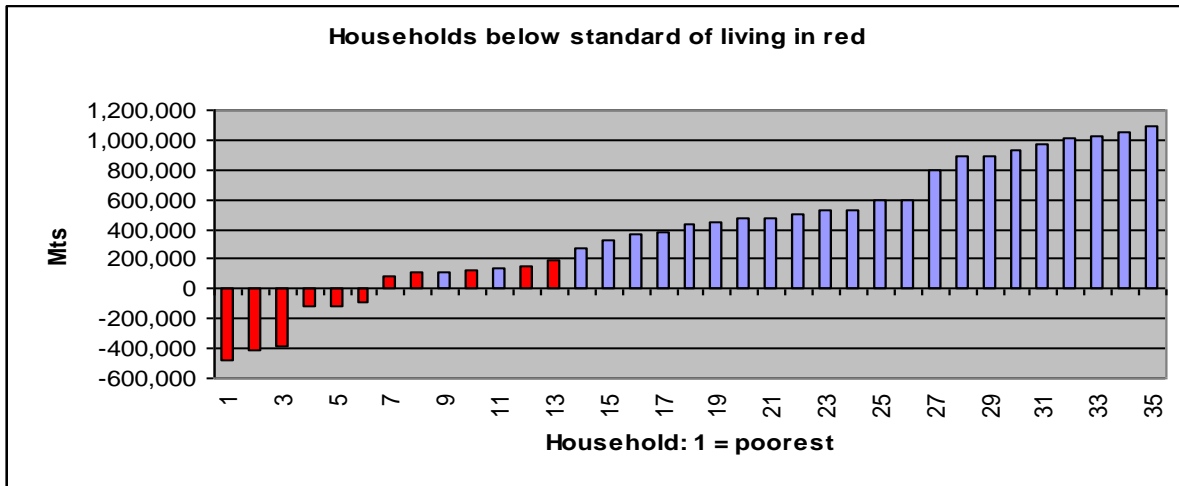
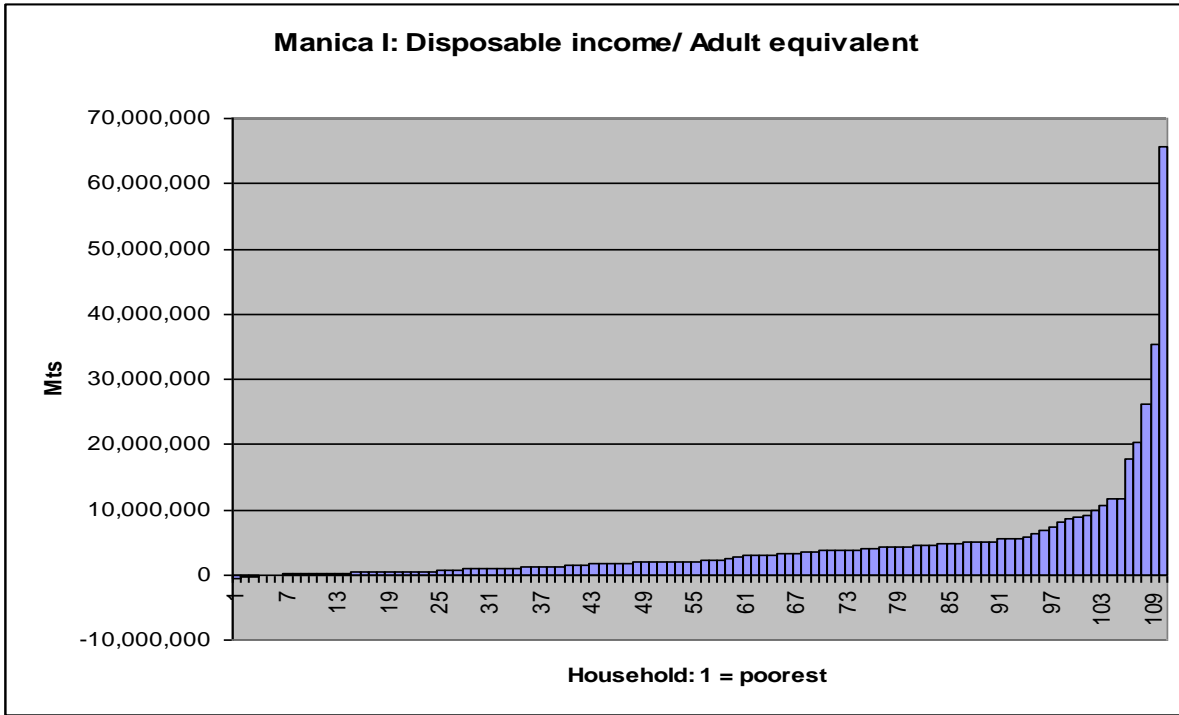


Fig 3 Disposable income/adult equivalent. Households below defined standard of living in red

The method used to calculate household costs (para 6.3) means that a household with, for example, many school aged children, may have a higher income per adult equivalent but less disposable income and a lower standard of living, than a household with a lower net income but fewer school aged children.

This is illustrated in Figure 4, which shows household expenses per adult equivalent in Bairro I. For each household in the distribution the graph shows the costs of meeting the minimum standard of living. The highest levels of expenditure needed to meet this standard of living are incurred by households with the largest number of school aged children. In the study population, the household with the highest expenses happens to be the second poorest household.

Figure 5, (Total Household Income) shows the total income per adult equivalent by source for each household. Food produced for consumption has been converted to its equivalent cash value (although not all of this food - e.g. mangoes in season- could in fact be sold). Figure 5 shows that in the poorer households, food makes up the larger part of gross household income, and that this proportion declines with increasing wealth. Larger incomes are derived chiefly from employment. Figure 6 shows the pattern of employment income and levels of cash income / adult equivalent.

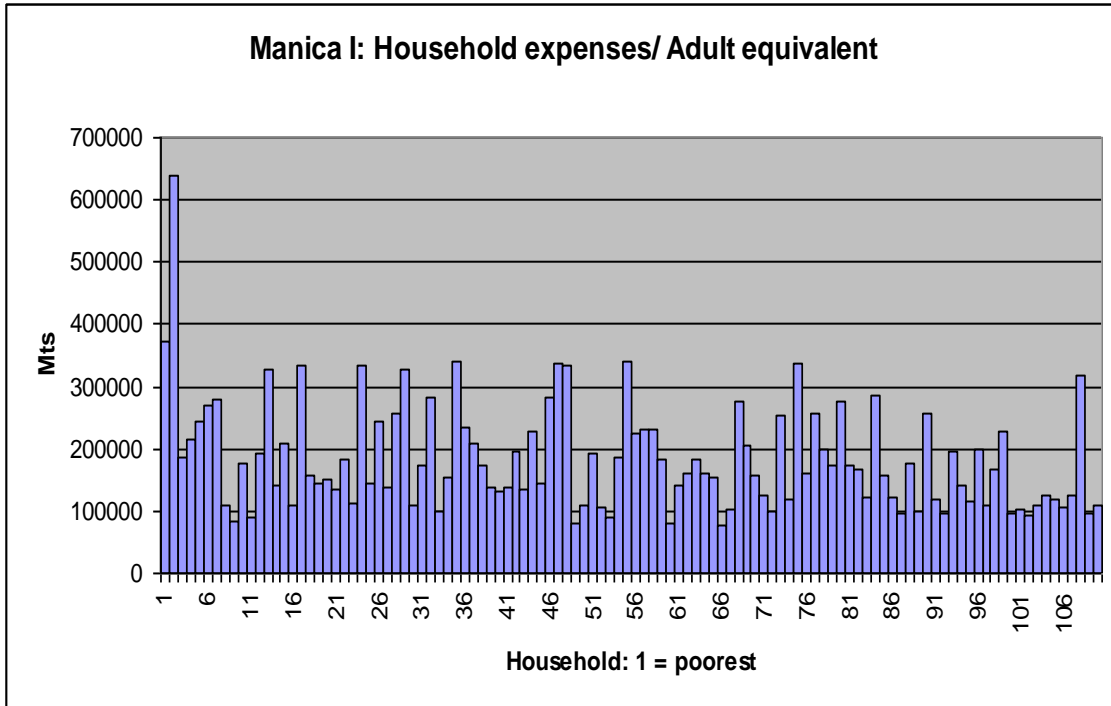


Figure 4. Household costs/adult equivalent to meet defined minimum standard of living.

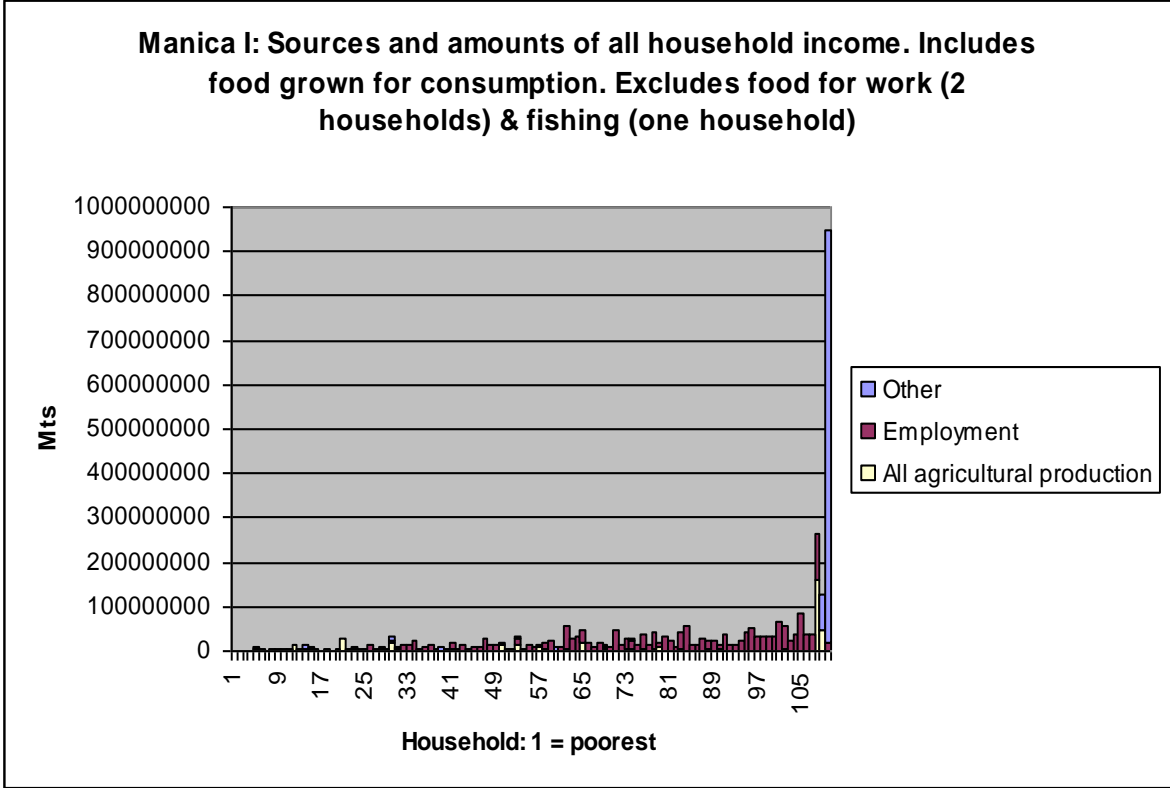
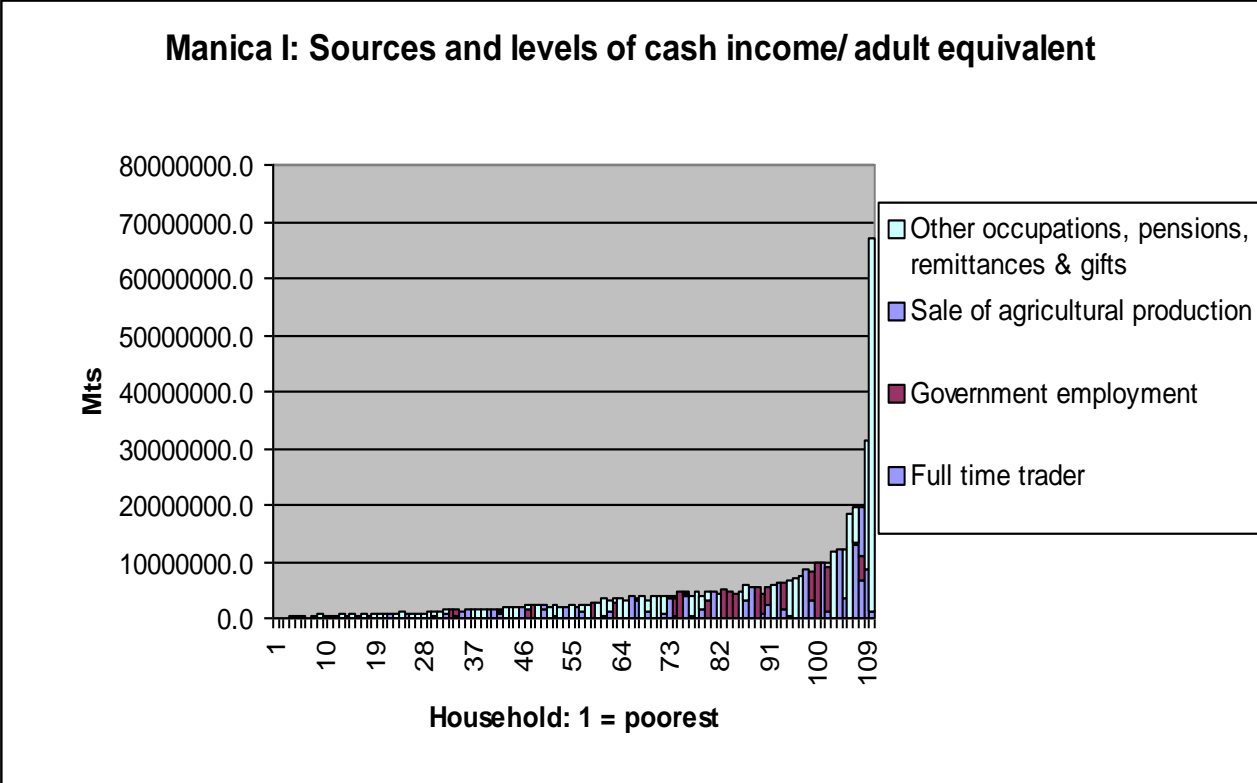


Fig 5 (above) Sources of household income in order of disposable income

Fig 6 (below) Sources and levels of cash income.adult equivalent



The proportion of village income derived from different sources is as follows:

Table 3 Income sources as proportion of village income

| Income source | Proportion of village income |
|-----------------------------------|------------------------------|
| Agricultural production and sales | 14% |
| Employment | 54% |
| Gifts and remittances | 32% |

Salaries employment provides the highest proportion of village income, followed by gifts and remittances and agricultural production and sales.

The main categories of employment in which people are engaged is as follows:

Table 3: Employment by sector

| Employment | Government | Trade | All other |
|-------------------------|-------------------|--------------|------------------|
| % total employed | 26% | 32% | 42% |

The relatively high level of government employment (including policemen, teachers, health workers and extension workers) reflects the proximity of the study site to the local district centre, and investment by government in the provision of education services.

7.3 The effects of drought

Although many households referred to their poor maize harvests in the course of interviews, and some mentioned 2003 as the 'first year in which they had had to buy maize', the contribution of maize production to overall household income is small. This is shown in Fig 7, which simulates a return to non drought conditions (i.e. the impact on household disposable of a 36% increase in production) . Overall, the effect is small (4.8% of total disposable income), as maize production makes only a small contribution to the income of most households. However some individual households, particularly

This estimate is based on figures provided by the local department of agriculture. The simulation is calculated by increasing maize production by 36% and recalculating household disposable income.

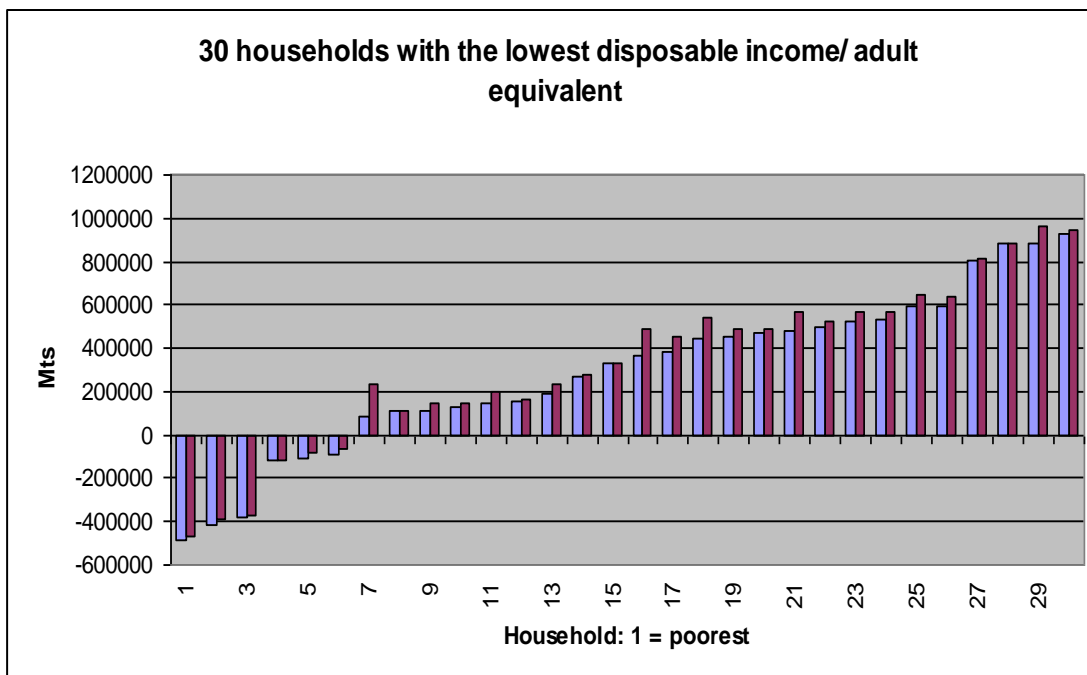
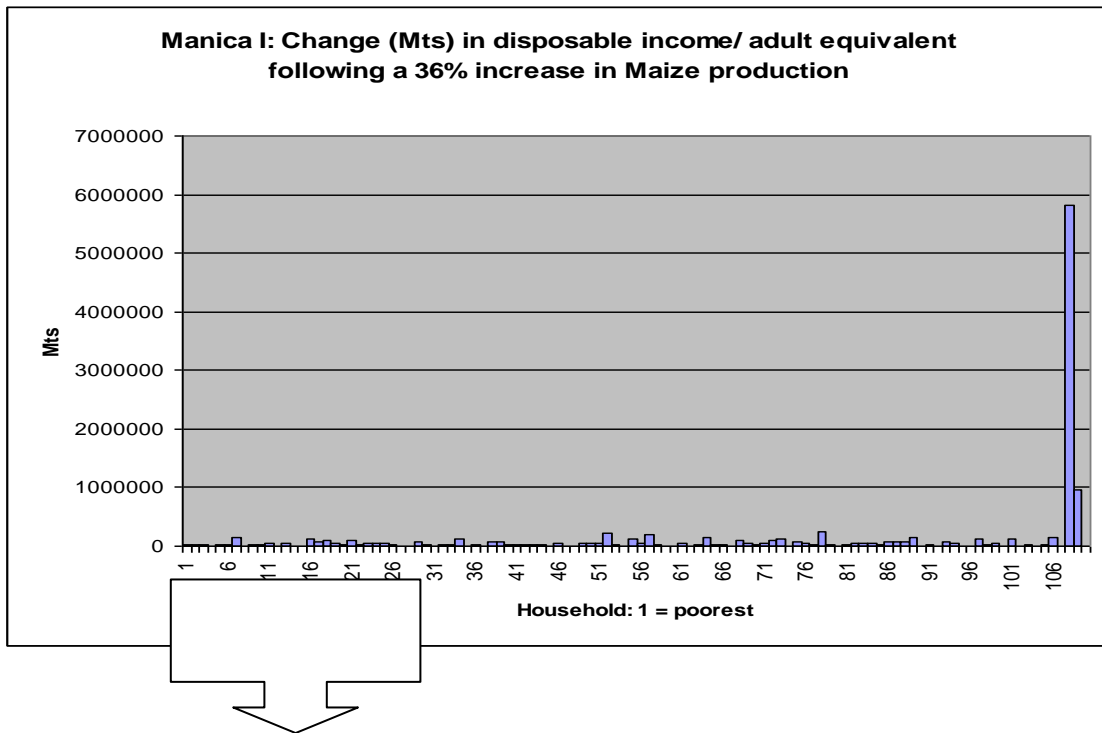
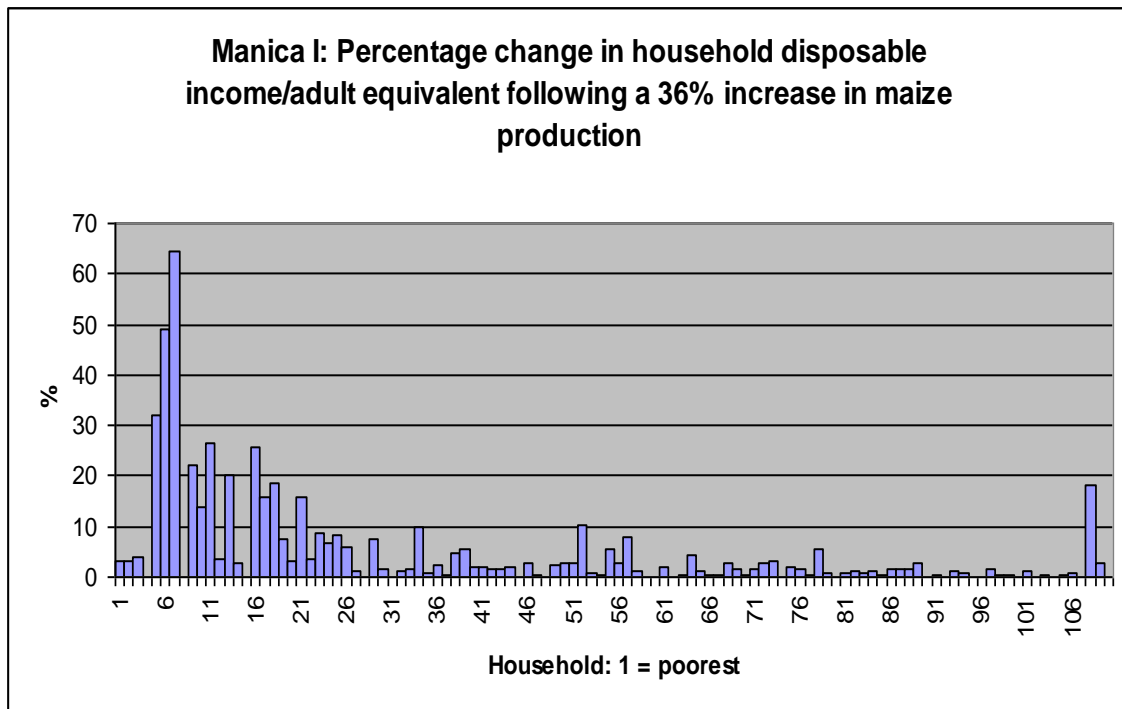


Figure 7. Simulated effect of a 36% increase in maize production on household disposable income/ adult equivalent

poorer households have suffered a substantial fall in their disposable income (Figure 8) as a result of the drought. This explains the reported increase in activities such as informal ('back yard') brick making and the increasing distances some women traders were travelling to buy vegetables.

Figure 8. Percent change in household disposable income/ adult equivalent from a 36% increase in maize production.



7.4 Distribution of landholdings

Fig 9 shows that land holdings per adult equivalent are fairly evenly distributed across the income range. This is consistent with a farming system based mainly on family labour, where land is only reallocated when it remains uncultivated. Some widow headed households reported a reduction in the area cultivated following their husband's death, as they reallocated time to more profitable trading activities. The child headed household reported that other people were currently using land formerly cultivated by his mother. He hoped to be able to reclaim this when he was able to cultivate it himself (see case study 3, section 8)

7.5 Characteristics of rich and poor households

In this section, we look at the characteristics of the 10 households that fall below the poverty line and at factors that distinguish these poorest households from better off households.

Analysis of sources of income, land size, demography (including presence of orphans and widows) and education levels shows a high degree of heterogeneity among the poorest households.

Levels of education among household heads varies considerably, as it does throughout the population. However, of the 6 poorest households for which information on education level is available, none attended secondary school. This is consistent with the observation that none of the poorest households is in government employment (teacher, health worker etc).

As would be expected at the lower end of an income distribution, most income is derived from petty trading activities, requiring low levels of capital.

The proportion of households headed by widows is somewhat greater than in the wider population. (25 out of 116/whole population; 3 out of 10/poorest 10 households). However, widowhood is not itself a reliable indicator of poverty and widow headed households are found across the wealth distribution. The impact of loss will vary

according to the deceased person's employment status and the capacities of surviving household members .

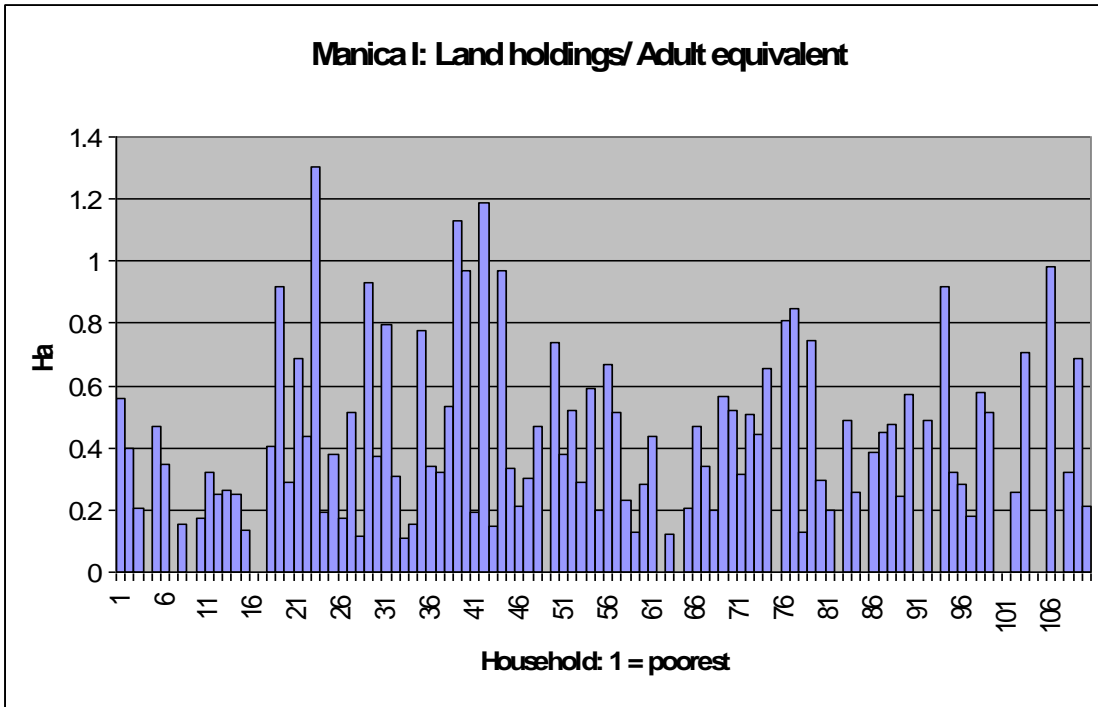


Figure 9. Landholdings/ adult equivalent

This point is explored systematically in the Swaziland study; see also section 8 of this report

None of the poorest households was able to meet its food needs from its own production and, as shown in Fig 7, a return to normal production would have a negligible impact. Although a majority of households had to buy maize at some point during this second successive drought year, richer households in general met a higher proportion of food needs from their own production than poor households. This is shown in Fig 10 (Percentage of food energy requirement met from household production).

Although the differences are not great, the distribution of land holdings per adult equivalent (Fig 9) shows slightly lower land availability among the poorest households. Since the labour requirements for maize production are relatively low *, this again suggests that poorer households have de-prioritised maize cultivation in favour of other activities such as petty trade, which brings in a higher cash income throughout the year.

Overall we found that in some cases the 'cause' of poverty can be identified quite clearly, for example in the case of the child headed household, where orphanhood resulted in the loss of income, land access and household labour. In other cases, the reason is not obvious; for example where households have land, labour and 'prime age' adults but crop production and income from petty trade is low. Six of the 10 poorest households fall into this category. This suggests that targeting assistance or monitoring change in HIV affected communities on the basis of simple indicators of poverty, should be treated with caution.

* The labour requirement for maize is around 56 'person days', per ha, assuming the use of an ox plough (75,000 Mts/ha) or tractor hire. Hand ploughing is very rarely undertaken. The main labour input is in weeding, which requires around 16 person days per month between November and January.

Fig 10

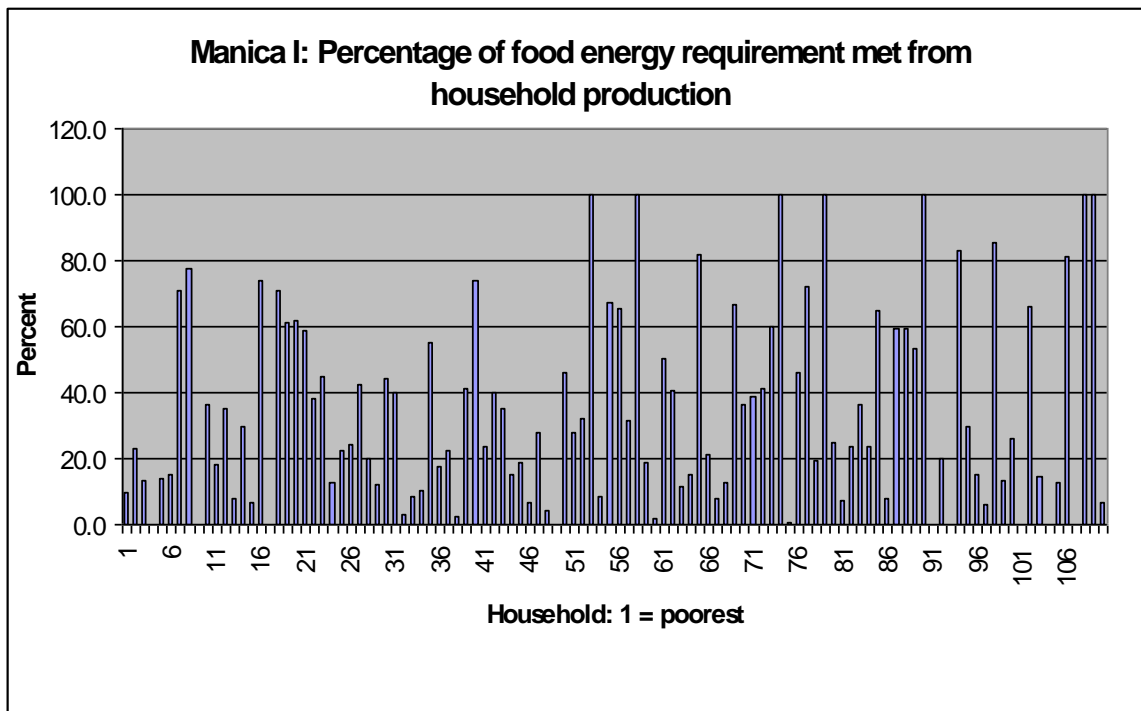


Fig 10 Percentage food energy requirement met from household production

Note: in a normal, non drought year, a higher proportion of households would meet their energy requirements from their own production. However, the chart indicates that some wealthier households have 'opted out' of maize production and would not aim to meet energy needs from own production.

8. The impact of HIV/AIDS on livelihoods

The following three case studies show how a recent death has changed household composition and economies. In each case, it is likely that the death was AIDS related.

1. Anna

Anna is about 30 years old. Her husband, who was employed as a driver, died in 2001. She has three daughters aged from 5 to 17 years and a baby of 1. Her compound is large and well maintained, and is surrounded by mangoes, bananas and other fruit trees. Before her husband became sick, Anna worked exclusively on the farm. The family cultivated around 4 hectares, and also had 0.5 ha mdimba, where they grew vegetables. They produced up to 5,000kg of maize in a good year, with a value of around 9,000,000 Mts . Her husband earned a salary of 4,800,000 Mts, giving the household an annual income of around 14,000,000 Mts in non drought years. Anna now works 2.5 ha, and meets household cereal needs with a small surplus. Since her husband's death, she has put her main efforts into trading activities and now has a successful, medium sized business selling bananas, tomatoes and yams. She was able to capitalise this business with a loan of 300,000 Mts from her brother, and currently shares major expenses (i.e. hire of transport) with two other women. The initial loan has now been repaid. Anna gains additional income from brewing and has a total income of around 6,000,000 Mts per year.

2. Felicia

Felicia is 28 years old and has sons aged 7, 4 and 2 years. Her husband Lorenzo was a farmer and died in 2001. She has a small house without any surrounding trees or compound. The household has 1 ha of land close to the bairro, on which Felicia cultivates maize. Last year's production was only about 60kg. Before her husband fell sick they had 'another field' ; however, this was far away, and they stopped cultivating it

when Lorenzo became ill. They had no capital and Felicia's main source of income now is from petty trade, selling vegetables in the market. She lives on a day to day basis, and does not get help from her relatives, who 'have their own families'. Her children will be wholly dependent on their support if Felicia herself become sick.

3. Christofa

Christofa is 13 years old. His mother died in 2000. His father died when he was much younger. He has a brother of 17 years, who now lives with a girl friend, so Christofa is on his own. He sleeps in a dilapidated hut, with crumbling walls and a collapsing roof. However, the compound is quite large and has bananas, mature mangoes and papayas. There is also a much better maintained house on the compound that Christofa rents out for 75,000 Mts a month to a local government worker and her teenage son. In addition to rental income, he earns up to 10,000 Mts / day carrying water when he can find the work. He sometimes gets food in return for working in restaurants in the town centre and is given food for work on a neighbour's field. His 'tenant' also gives him one or two meals during the week, and passes on to him her son's old clothes.

Before his mother died, they used to cultivate 1 ha. His mother also sold firewood. The land has now been taken over by other people, although he hopes he will be able to reclaim it when he is older. Christofa is in the 5th class and attends school regularly. He is very enterprising-he organised the rental of his house without assistance, is arranging to upgrade it with a concrete floor, and hopes one day to become a teacher. At the moment he seems to be managing and is fortunate in his tenant, but he lacks adult support.

These histories illustrate the different ways that HIV/AIDS can change individual livelihoods, without necessarily causing destitution. The first household (Anna) is well connected (she has a good stock of social capital) and the personal skills and capacities to adapt to change; despite the loss of a driver's income, the household remains in the top half of the wealth distribution. However, her household is extremely vulnerable, and if

she were to become sick, her family could very quickly become destitute. Although she might reduce their insecurity by saving income for secondary schooling and possible medical expenses, the children's long-term security cannot, in present conditions, be assured.

The second household (Felicia) is very poor; however, her poverty was not caused by HIV/AIDS-the household was poor even before her husband's death. She trades on a very small scale, and might be assisted by a loan to capitalise her trade, or to invest in a small kiosk. She too needs to build up reserves, for her own potential health needs and for the children's schooling etc. For this household, as well as the previous case, it is important to resolve succession issues and the children's possible future care arrangements. However, there are currently no formal mechanisms to oversee this process.

Finally, Christofo has so far survived. As long as he is able to rent out his house, he has a reasonable chance of meeting basic needs. He will definitely need assistance if he is to achieve his ambition of staying in school and going on to higher education. He would also benefit from an adult 'guardian' or 'volunteer' to look after his best interests, and to secure any claims he and his brother may have to land or property.

These themes are taken up in the final section.

9.0 Poverty and wealth in Bairro I

At a community level the importance of the public sector in providing employment (eg teachers, policemen) is notable in this community, and makes up 26% of all employment. Government prioritisation of the public sector means that salaries are paid regularly and employees are almost exclusively in the highest income quartile (fig 6). In addition to the direct benefits of this investment in terms of access to education, health and security of people and property, their higher disposable income generates demand for a wide range of goods and services (from builders to butchers, bakers and banana sellers).

These households are also relatively unaffected by fluctuations in maize production and prices and it is clear from the assessment that many have chosen to put minimal

resources into farming. (Anecdotally, we were told by one teacher that his losses in maize production over the two previous years meant that this year he had simply not bothered to plant).

The importance of formal sector employment and trade explain one of the study's main findings, namely that in this high potential maize producing area, the recent fall in maize production due to drought, had a relatively low impact on overall household disposable income. Whilst many households were unhappy that a smaller proportion of their own consumption needs were covered by production, or that income from sales had fallen, most were in fact well able to meet the cost of purchase from other income. It was only at the lower end of the wealth distribution that the impact made a significant impact on disposable income (fig 8)

9. 1 Poverty, HIV/AIDS and interventions

In this study, comprehensive data on income loss through recent adult deaths was not available. However, the household economy data shows that, at this point in the epidemic, the majority of households (both HIV/AIDS affected and non-affected) remain above the poverty line. This does not mean that they are unaffected, or that, as more widows become sick, increasing numbers of children will not face an uncertain future

The analysis of poverty and wealth shows that overall, Bairro I is a relatively well off community, at least in comparison with other parts of the country. It illustrates how different households, including those affected by HIV/AIDS, exploit the economic possibilities that are available to them.

The availability of salaried employment and trade, combined with the possibility of labour on local commercial farms, means that the majority of households are able to meet their basic needs. The small minority that fall below the poverty line do so for a number of reasons; using our proxy indicator (orphanhood) the 'cause' can only be definitely attributed to HIV/AIDS in one case (the child headed household)

The use of individual household economy methods provides a quantitative measure of both the nature and extent of poverty in this community and the scale of intervention that would be needed to reach defined policy objectives (for example, to bring all households

above the poverty threshold) *. However, the analysis casts doubt on the feasibility of deriving 'simple' HIV/AIDS related poverty indicators. Thus, although the over-representation of households with orphans at the lower end of the wealth distribution suggests that HIV/AIDS is impoverishing some households in Bairro I, it cannot, at the present time, be characterised as the main 'cause' of poverty.

Individual HEA assessments provide a good measurement of absolute need. However, if the aim of measuring poverty is to guide responses, a key inference from this study is the importance of work at community level. Given the varied circumstances that face the poorest households, it is necessary to identify household specific needs and connect people to relevant services or resources. It is likely that the main focus of this work will be to secure extended family based care for orphans **, and to back this up with relevant support. In some cases this may involve direct welfare transfers e.g. feeding elderly headed orphan households; in others, it may involve waiving of basic service fees; capitalising small enterprise etc.

10. End Note: Practical applications and implications of findings

We were asked by our local partners to make some specific comments on potential practical uses of information derived from the study.

Based on good field work and collaboration, the approach outlined in this report could be used by local agencies working with the poorest households in the following ways

- (i) To establish a quantitative base line describing current household assets (land, livestock, skills and expertise) and the household's capacity to derive income from different kinds of work

*The actual cause of orphanhood is not known in this case

*Data from this assessment could also be used to model the effects of potential policy interventions (e.g. providing school meals; subsidising transport etc) on both individual household income and overall poverty levels.

**This problem is not unique to children orphaned by HIV/AIDS. It is the condition of any orphan in a poor society that lacks a comprehensive social safety net; the HIV/AIDS pandemic has in fact drawn attention to a previously neglected group.

- (ii) To identify predictable problems individual households are likely to face in maintaining disposable income levels eg mother falls sick; access to livestock grazing land lost; rising levels of school expenditure as children move into secondary level etc
- (iii) Based on this assessment, to discuss with the household a range of specific activities/interventions to prepare for these eg savings plans for schooling, capitalising a petty trade activity to get better returns; skills training for adolescent children etc.
- (iv) Where there are no practical options for raising income (eg elderly headed households with primary school children), survey information could be used to assess the level of assistance required across the community, to guarantee basic living standards and on this quantitative basis, to estimate the cost of filling the gap. This would be a powerful (evidence based) advocacy tool. The local organisation would be well placed to mediate between households requiring assistance and resource providers (government agencies, larger NGOs etc). It would have the advantage of working from a transparent, quantitative assessment of individual household needs and capacities.
- (v) A quantitative base line, such as that provided by the study, is an necessary starting point for monitoring project impacts. For example, if households are provided with credit, it would be possible to track any increase in disposable income arising from this. In selected cases, projects may decide to repeat 'long interviews' over the intervention period. This would give an insight into changes in the proportion of disposable income allocated to different items of expenditure, eg education, health, farm inputs, leisure etc, and other changes in income and demography.
- (vi) Although we did not look in detail at demand for different goods and services (see annexe 2) local market assessments could be incorporated eg in credit and savings work, to reduce the risk of poor investment choices.

Clearly, this level of work is only possible where a competent community based organisation like Kubitsirana has an established presence.

Organisations are likely to be most effective in 'strengthening the community response' to orphans, if their interventions assist any household experiencing economic stress to

maintain its living standards, and if its field workers are able to provide a combination of economic as well as practical 'social/pastoral ' support where it is needed.

Annexe 1

The Model

Background

In this study, household economy methods adapted from methods originally developed at SC UK for famine prediction, (the 'household economy approach') have been used. Famine prediction requires the ability to estimate household 'food entitlement' i.e. the ability of a household to acquire food under changed conditions e.g. of price, production, market access .(Sen, 1981). Knowledge of reduced food production levels, (for example from drought) is not in a reliable or useful predictor as some or all households may (i) not grow crops, or crops that are drought prone (ii) may be able to make up any deficit in production in other ways e.g. by selling assets, falling back on wild foods etc.

The household economy approach was developed to see if it was possible to estimate household entitlement within and between defined populations of different economy (e.g. poor, better-off; cultivating, pastoral) with sufficient accuracy to allow predictions to be made of the likely impact on household economy of production failure and other shocks.

To be effective the method also had to

- Produce output in terms that would be convincing to donors and other agencies.
- Be based on clear objectives e.g. to allow for a household to retain livestock and other assets and to maintain some access to non-food goods as well as food.
- Be able to identify possible interventions e.g. market support, which could be used to prevent a food crisis occurring.

The approach developed was therefore based on an economic model, to simulate the most likely outcome of the impact a shock or shocks on household food entitlement. To meet the other operational criteria it was important to keep the model as simple as possible. Put in other terms, the aim was to allow a user to develop a logical, quantified case about the most likely impact of a stated shock on economy at a high level of

Choice of vocabulary is difficult: 'psycho-social' has clinical psychological connotations; 'social work' carries western social services associations; pastoral can have unintended religious connotations.

disaggregation (e.g. the impact on the poor) where the assumptions are explicit, areas of uncertainty are revealed, and where the prediction is open to test e.g. if a prediction is made that people will sell livestock, this, or a fall in livestock prices should be observed.

For famine prediction, information is required on large areas of diverse economy and a simplified data set is used. For each defined population, this includes a household budget and an estimate of household assets, for each of at least three 'typical' wealth groups (poor, middle, rich), with information on access to wild foods and gifts e.g. charity, food and asset transfers between kin. In larger scale applications an understanding of the market in labour, livestock and other goods is required.

The basic simulation is extremely simple i.e. the shock is used to adjust household food and non-food income to reveal the amount of food and cash remaining to the household and therefore (given stated assumptions about non-food costs) the ability of the household to acquire sufficient food. For example, at the simplest level, a household that made 50% of its income from maize cultivation in a baseline year, would, if maize production fell by 50%, suffer a fall of 25% in its income. If the household had maize stocks equivalent to 10% of its annual requirement, this would reduce the deficit to 15%.

In practice, households may produce some of their own food, exchange this for other food items and cash and have multiple employment and other income sources, and the 'shock' may involve multiple changes e.g. to prices and production levels. The basic calculations become very intricate but remain the same.

This approach has proved to be very effective . In all cases where we have some measures of actual outcome (a total of 14 examples) this has been consistent with prediction. The method has been widely used (e.g. by Operation Lifeline Sudan (OLS) in southern Sudan, for the prediction of the recent famine in Malawi), and has been adopted by USAID/FEWSNET and others. The operational effectiveness of the model lies largely in its structure (i.e. the simulation of the actual steps which households can take to preserve their livelihoods); the detail and 'completeness' of the data set, and the relative simplicity of the mathematics.

Methods used in this study

In this study the same basic model has been used. The differences are:

- That all households in the community were included and data was collected on each household separately.
- The data set was extended to include a detailed description of household membership and relationships and for households with orphans their origin and (because of its importance as an actual and potential income source) maize production.

The assumptions on which this calculation is based are discussed in the text (section 6).

Example

To further investigate the impact of the drought on disposable income and living standards across the population, a return to 'non-drought' conditions was simulated. An increase in production of 36% above current levels was calculated as follows:

The impact of a change in maize price on the disposable income of a household is estimated as follows. Taking for example a household of 3.2 adult equivalents which produced all the food it required for consumption and had a total cash income from all sources, of 4,000,000 Mts of which 500,000 Mts was from the sale of 250kg of maize at the reference year price of 2,000 Mts/kg

The disposable income/adult equivalent in the reference year would be $4,000,000/3.2 = 1,250,000$ Mts

Assuming that production increased by 36%, the effect would be to raise total income to 340kg (250kg+90kg) = 680,000 Mts. Total income is now 4,680,000 Mts i.e. a disposable income/ adult equivalent of 1,462,500, representing an increase of 17%.

The calculation is repeated for all households in the data set.

Annexe 2

Agriculture: Crops and livestock

Crops: The main crops grown are: maize, sorghum, millet, cassava, yams, potato, sweet potato, groundnuts, beans (butter beans, cow-peas, nhemba), and a wide variety of vegetables

During a normal year, large quantities of maize are sold by the family sector, to grain traders from Southern Mozambique, Chimoio and Beira.

Cash Crops: Sunflower, Cashew, Cotton, Tobacco.

There is a tradition of tobacco growing in the area, although this did not take place during the war. Tobacco farming has recently revived with the influx of foreign (Zimbabwean) investment and is mainly grown on commercial farms with local farm labour. A small commercial farmers are starting to invest in tobacco; these farmers grow and sell to the larger farmers. We interviewed one farmer in Bairro I who employs year-round labour and sells tobacco.

Although cotton is mentioned in the literature as a cash crop there was no evidence that cotton was grown by the farmers in Bairro I.

Sunflower is grown by the farmers to use in manual presses. Small quantities of hand-pressed oil are prepared for the local market.

Fruit trees: Banana, mango, avocado pear, orange, lemon, papaya, and cashew trees are grown. Very little fruit processing was found in the area. Only one household dried bananas to use in bread-making throughout the year. Generally fruit was eaten in-season and not preserved.

Livestock: Goats, chickens, cattle are found (very few pigs were visible in the market). Recent rules banning the corralling of animals within the district centre boundaries have reduced livestock rearing in Bairro I. Cattle and goats must now be kept away from the settlement and households wishing to continue cattle rearing must therefore employ herd boys to watch over them. A number of incidents were also reported to the survey

team, in which animals had destroyed crops (maize and cassava) and heavy fines paid by the owners of the animals.

Fishing : There appears to have been a thriving small scale fishing industry in the district (lake and river fishing) before 2000. The fishing industry was disrupted by the devastating floods of 2000, when nets and boats were lost, and fishermen have not reinvested in the industry. In Bairro I there were very few households fishing at the time of the survey. Key informants said that in the rainy season some fishing would take place in the rivers but that this was carried out to supplement household food consumption and not for sale.

Hunting : Hunting was not mentioned as a major activity in Sussendenga.

Annexe 3 /Employment Options, Petty Trade and Wage Rate/Earnings

Period: 2002-2003

| Work | Wage Rate/Earnings (indicate per day / month/year) | Comment e.g. number of months work available per year |
|---|--|---|
| Agricultural labour (Commercial farms) | 500,000 per month Range 450 – 560,000 month | September-February |
| Agricultural labour (Local) | 250,000 per month (monthly pay) | September- February |
| Temporary ,contracts on daily, weekly or monthly basis | 10,000 – 20,000 per day for 3-6 days. | September-February |
| Selling vegetables | 715,000 per month | Jan-Dec |
| Brewing | 30,000 Mts. per each brewing (twice in a month) | Jan-December |
| Making bricks | 1,800,000 Mts. per month | 4 months period |
| Firing bricks | 2,200,000 Mts. Per month | 4 months period |
| Construction: houses | | |
| Construction: wells | 1,000,000 –1,800,000 Mts. per month | 12 months period |
| Construction: latrines | | |
| Tailor | 350,000 Mts. Per week | |
| Policeman lower rank | 8,000,000- 1,500,000 Mts. | 12 months period |
| Policeman higher rank | 1,500,000,- 2,000, 000 Mts. | 12 months period |
| Teacher lower (untrained) | 1,542,023 Mts. | 12 months period |
| Teacher middle | 1,761,441 Mts. | 12 months period |
| Teacher higher | 2,392,405 Mts. | 12 months period |
| Nurse | 1,542,000 – 3,000,000 mt | |
| 2nd hand clothes sale | Sale of jackets per day is 6,000,000 Mts. | 12 months period |
| Carpenter | 1,100,000 Mts. per week or two | 12 months period |
| Baraca/kiosk | 300,000 Mts. per week | 12 months period |
| Fisherman | 4,350,000 per month and once in 3 months period. | 6 months period |
| Fishmonger | 600,000 Mts. per month | 6 months period |
| Cutting grass | 120,000 Mts. per month | |
| Secretarial | 1,500,000 –1,800,000Mts. Per month | 12 months per month |
| Hospital worker lower | 860,000 mt per month | |
| Hospital worker high | 1,500,000 mt per month | |
| Domestic/empregada (usually children) | 70,000-100,000 per month | |