

United Nations



Nations Unies

**Regional Inter-agency Coordination Support Office  
(RIACSO)  
Southern Africa**

**Technical Consultation on Measuring Vulnerability in the Light  
of the HIV/AIDS Pandemic**

**HIV/AIDS and Vulnerability:  
An Overview of Micro, Meso, and Macro Level Implications**

**Prepared by  
TANGO International**

**9-11 September 2003  
Johannesburg, South Africa**

## Table of Contents

I. Introduction .....	1
II. Defining Vulnerability .....	1
III. Why Vulnerability to HIV/AIDS is Different from Other Food and Livelihood Insecurity Shocks .....	2
A. HIV/AIDS, Livelihoods and Vulnerability .....	3
B. Viewing HIV/AIDS Vulnerability from a Livelihood Framework.....	4
C. HIV/AIDS, Food Insecurity, and Malnutrition: A Vicious Cycle .....	5
D. HIV/AIDS and Emergencies.....	7
E. Manifestations of Vulnerability in Southern Africa.....	7
IV. Key Dimensions to Take into Consideration in Indicator Development.....	8
A. Targeting .....	8
B. A Deeper Analysis of Livelihood Vulnerability Resulting from the Impact of HIV/AIDS .....	9
C. Issues Regarding Impact Measurement of Programs .....	9
D. Methodological Considerations .....	10
V. Potential HIV/AIDS Indicators .....	11
A. Targeting Indicators .....	11
B. Livelihood Impact Indicators .....	13
C. Program Outcome Measures .....	17
VI. Conclusion .....	17
References.....	18

## **I. Introduction**

HIV/AIDS is currently one of the greatest threats to global development and stability. It is a long term humanitarian crisis that will last for decades. Since the emergence of the epidemic, more than 60 million people worldwide have been infected with the virus. Over 20 million have died. Of the 42 million people currently living with the virus, 28.5 million (71%) live in Sub-Saharan Africa with infection rates rising. Prevalence rates in Southern Africa are the highest in the world. UNAIDS estimates that almost 15 million people in Southern Africa were living with the virus at the end of 2001, and 1.1 million died of AIDS (UNAIDS 2002). The elderly now care for up to 8 million orphaned children by AIDS with little or no help (IRIN 2002). By 2010, AIDS will leave 20 million children under the age of 15 in Africa without one or both parents (UNAIDS 2002).

Transportation routes, poverty, civil conflicts and cultural practices regarding sexuality are the main causes for the spread of the disease. As impoverished families try to cope with the morbidity and mortality associated with the disease, a significant divestment of assets usually occurs, threatening the dissolution of the family unit itself. Community safety nets are slowly breaking down due to the number of households that require assistance in meeting care, food, cash and labor needs and their inability to repay assistance in kind. Community members that are left responsible for a large number of orphans are poor themselves, making care for these children a heavy burden.

The crisis in Southern Africa highlights the complex interactions between HIV/AIDS, food insecurity and humanitarian action. An understanding of the complex and diverse ways that the epidemic affects micro, meso, and macro level conditions is necessary to understand how the pandemic is increasing underlying vulnerability and creating present and future emergencies. This expert consultation has been organized with the purpose to explore how HIV/AIDS impacts can be addressed in vulnerability assessments. This meeting is intended to review how HIV/AIDS is currently being integrated into definitions of vulnerability, how this is being measured, and what the potential indicators are for assessing impact.

The purpose of this paper is to present a general overview of the key issues that relate to HIV/AIDS and vulnerability, how this vulnerability manifests itself at multiple levels, and what measurement issues need to be taken into account to improve targeting and program impacts.

This paper begins by discussing why HIV/AIDS is different from normal food and livelihood insecurity shocks. This difference requires that we use a different kind of conceptual framework to look at HIV/AIDS, one that takes a multi-sector perspective into account. This discussion is followed by a review of the key issues that need to be considered in assessment and analyses that take place at the micro, meso, and macro levels. The paper concludes with a discussion of factors that need to be considered in the identification of indicators for the various levels.

## **II. Defining Vulnerability**

Vulnerability is classically defined as exposure to risk and stress and the lack of ability to cope with the consequences of risk (Chambers 1989; Webb and Harinarayan 1999). Thus,

vulnerability has two dimensions: exposure and susceptibility. Exposure is the likelihood that an individual or household will be affected by a shock or threat. Susceptibility is the individual's or household's ability to cope with such threats (Devereux 2002).

Vulnerability, poverty and food insecurity are not the same. The latter two concepts describe livelihood states at particular points in time. Vulnerability looks forward and seeks to describe the extent to which individuals and families are prone to the inability to cope with adverse events. Poverty is essentially a static concept whereas vulnerability is dynamic and describes how people move in and out of poverty (Moser 1998). To determine vulnerability, we must look at assets, activities and outcomes. The degree of vulnerability can be represented by risk management and coping and how this changes over time (Ellis 2002). Looking at variations in asset ownership and the ability to use the assets productively can help identify different vulnerable groups.

Distinguishing vulnerable groups enables social support to be spatially and temporally targeted so that these groups do not slide into destitution when shocks occur. Some groups may be chronically vulnerable and require routine support while others may experience transitory vulnerability. The proportion of the population living in chronic vulnerability in Africa has increased due to the HIV/AIDS pandemic.

In order to analyze vulnerable populations, it is important to look at factors causing assets and coping capabilities to deteriorate, rather than at assets and coping strategies themselves (Ellis 2002). Although it is difficult to give an objective value to vulnerability, we can assess the direction that vulnerability is moving through the use of indirect indicators. For example, resiliency and sensitivity to shocks can be used to assess vulnerability. Resiliency refers to the ability of a system to bounce back from a shock while sensitivity refers to the extent in which a system is impacted by a shock. A vulnerable livelihood is thus one that exhibits low resiliency and high sensitivity.

### **III. Why Vulnerability to HIV/AIDS is Different from Other Food and Livelihood Insecurity Shocks**

HIV/AIDS is not just another problem of health and under-development. It is unique by its nature and effects for the following reasons:

- It kills the most productive – and reproductive – members of society in the 15-49 year age bracket, thus increasing household dependency ratios, reducing household productivity and caring capacity, and interrupting the transfer of local knowledge and skills from one generation to the next. The effect on the household may be permanent;
- It is hidden. The private nature and complex cultural attitudes towards sex lead to silence, denial, stigma and discrimination at many levels;
- It has a long incubation period between infection and major illness, although the virus can be transmitted during this time. This, coupled with the fact it is hidden, significantly increase the chances of HIV transmission;
- It has both rural and urban dimensions. For example, many migrant workers who become infected in cities come back home to their village to die, while the death of

one or more income-earners in rural households often forces survivors to migrate to seek work in cities;

- It affects both the rich and the poor, though it is the poor who face the most severe impact. Poverty drives HIV epidemics, while AIDS in turn prolongs and deepens poverty, making it harder to escape from deprivation;
- It affects both sexes but is not gender-neutral. To the extent that women are marginalized and powerless, they are more at risk of being exposed to HIV and less likely to seek health care. Women, especially younger women, are also more biologically vulnerable than men to being infected in a given sexual encounter. Moreover, women are often left with few assets following the death of the husband;
- Finally, one of the most disturbing aspects of the pandemic is the fact that as it intensifies the local and national capacity to respond is decreasing. Organizations that are located in areas with high HIV/AIDS prevalence are characterized by high absenteeism, high turnover, a loss of institutional memory, and reduced innovation. As individuals in government and non-governmental organizations continue to die, the capacity gap—between what is needed and what can be delivered—is becoming an abyss.

Unlike most natural catastrophes, HIV/AIDS causes protracted and extended consequences that far exceed most environmental disasters. AIDS disrupts the transfer of knowledge and skills from parents to children thereby threatening the social and institutional capacities to respond to the intensifying problem (USAID/ICRW 2002). Furthermore, there is oftentimes deep-rooted stigmatization and discrimination toward people associated with HIV/AIDS. For poor households, HIV/AIDS symbolizes one more shock that threatens their ability to sustain their livelihoods and food security. There are also critical community level impacts that go beyond these aggregated household level impacts. When faced with external shocks, households cope by turning to informal community safety nets. However, due to the number of households needing assistance in meeting cash, care, food and labor needs, along with their inability to repay assistance in kind, these safety nets are slowly breaking down.

#### ***A. HIV/AIDS, Livelihoods and Vulnerability***

The relationship between livelihood strategies and HIV/AIDS is multi-dimensional and particular to local context. Insecure livelihoods may increase vulnerability to risky behavior, and in turn, HIV infection (Hawkins and Hussein 2002). Not only is HIV/AIDS variable in time and space, it is also affected by a range of activities and interventions. “HIV is not an exogenous force, like a cyclone, but endogenous to livelihood and agricultural systems” (Loevinsohn and Gillespie 2003), influenced by human action at many levels. A wide range of policies and programs can influence migration patterns and livelihood options, and in turn, may influence either positively or negatively, people’s susceptibility to HIV or their vulnerability to the consequences of AIDS. The overall impact of orphans on the livelihood of a household, for example, will depend on a wide range of factors. Orphans who are able to work may have a net positive impact on food security. As the SADC study argues, “the net impact of orphans on the ratio between household production and consumption will vary according to several factors including the age and sex of the orphan and the socio-economic and demographic characteristics of the host household” (SADC FANR VAC 2003).

HIV/AIDS is not just a health problem, but should be regarded as a multi-sectoral issue that cuts across socio-economic lines as well as geographical boundaries, pervading societies in systemic ways. A livelihoods approach is ideal to analyze the multiple dimensions of HIV/AIDS. The holistic framework helps in identifying the fundamental causes and effects of vulnerability and poverty in relation to HIV/AIDS, and in turn, offers an effective means for prioritization of action at the operational level. Individuals are at the center of the livelihoods framework analysis, where examining the impact of HIV/AIDS on food and nutritional security of various groups – including orphans and other vulnerable children – helps to identify how these adverse impacts increase vulnerability over time.

Vulnerability is a key concept linking HIV/AIDS and its impact on livelihood insecurity. Although HIV/AIDS is not only a disease of poverty, poverty in general increases vulnerability to risk of infection as well as to impacts of the disease. “To be vulnerable in the context of HIV/AIDS means to be able to exercise little or no control over one’s risk of acquiring HIV infection, or for those already affected by HIV to have little or no access to appropriate care and support” (Hawkins and Hussein 2002). A range of factors, including marginalization, stigmatization, and discrimination, as well as inequity and gender relations, mobility and migration, and conflict and political instability, influence vulnerability.

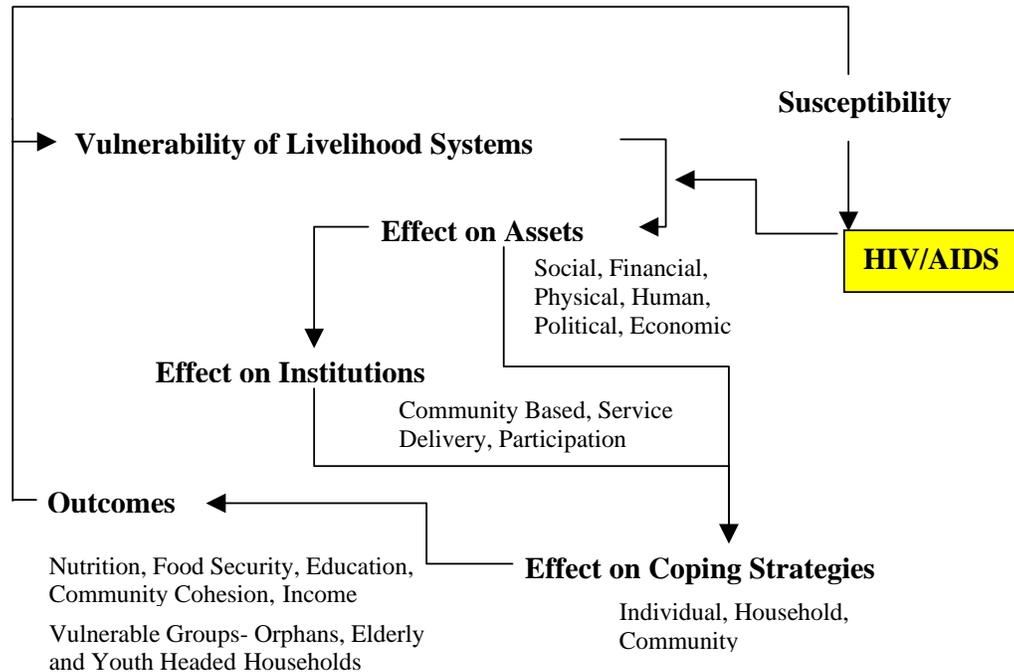
Figure 1 illustrates relationships between susceptibility and vulnerability to HIV/AIDS in a livelihood context. HIV/AIDS is likely to impact the assets of households and community-based institutions (see Text Box 1). The type and severity of these impacts will be influenced by the nature of the vulnerability of the household or community. These impacts will lead to strategic responses made at different levels, which in turn will lead to certain outcomes, for example, on food security and nutrition. It is important to acknowledge the feedback loops; that is, that these outcomes themselves condition future susceptibility and vulnerability of livelihoods and the households and communities that depend upon them. These loops indicate the interconnectedness and the inter-generational aspect of HIV/AIDS impacts.

### ***B. Viewing HIV/AIDS Vulnerability from a Livelihood Framework***

Using an HIV/AIDS lens, a livelihood system analysis begins with identifying livelihood strategies that are susceptible to HIV/AIDS (DFID 2000). It then tracks the impact of AIDS on assets—human, natural, financial, physical, social, and political—and on community-based and service-delivery institutions. For example, livelihood systems that have a greater reliance on migration, are very mobile or have strong urban-rural linkages, may be more susceptible to HIV/AIDS infection. Women in patrilineal systems are more vulnerable to the effects of the disease than in matrilineal systems. Institutions are negatively impacted by the pandemic as well. For example, skilled personnel in government and NGO posts are dying; and the loss of a trained labor force in the private sector incurs a greater cost for industry and has created a severe crisis for commercial agriculture. Conditions and risk profiles differ significantly within and across countries. These conditions reveal trade-offs that need to be considered. Context will influence choices of HIV-positive mothers, for example, in weighing the risks between breastfeeding, which may increase the risk of mother-to-child transmission, and switching to formula, which may significantly increase the risk of other health hazards (Loevinsohn and Gillespie 2003).

From a systems perspective, it becomes clear where interventions could be integrated to reduce risk of HIV infection and mitigate the negative impact of HIV/AIDS. Whenever possible, preventive measures need to be linked to mitigation efforts to ensure that both the causes and symptoms are being addressed.

**Figure 1: Understanding HIV/AIDS in the Context of People’s Livelihoods**



**Text Box 1: HIV/AIDS Effects On Capital**

HIV/AIDS has the following negative effects on capital in livelihood systems:

- **Human Capital:** It decreases the productivity of household labour due to sickness and AIDS-related malnutrition; children are forced to leave school early; there is a loss of indigenous knowledge between generations; and according to FAO, 7 million extension workers in 25 sub-Saharan countries have perished. Sixteen million more will die in the next two decades.
- **Financial Capital:** Medical costs and funerals are a major financial burden; AIDS-affected households are forced to sell assets to pay AIDS related costs; and affected households cannot get loans from banks.
- **Natural Capital:** Land is sold to pay for medical and funeral expenses; land inheritance patterns can make widows in certain patrilineal systems more vulnerable; the productivity of land in AIDS-affected households has gone down considerably; crop diversity has decreased; and cropping changes have favoured less labour intensive, less nutritious crops.
- **Physical Capital:** Affected households are forced to sell productive assets and livestock; and the loss of productive animals for traction further reduces agricultural productivity.
- **Social Capital:** The loss of labour strains the capacity for a household to mobilize social capital; and the system is overburdened with the demands for care giving cash, and labour.

**C. HIV/AIDS, Food Insecurity, and Malnutrition: A Vicious Cycle**

HIV/AIDS has a major impact on household food security and nutrition. The burden of ill health and death as a result of the impacts of AIDS on livelihoods is manifested in the depletion of human capital, disruption of social support networks as well as institutions. It undermines livelihood opportunities, productivity and social support mechanisms. Evidence suggests that the impact of HIV/AIDS on food security and nutrition is directly related to the wealth of the household. Spending on food in poor households falls significantly following the death of an economically productive adult. Rural development and livelihood opportunities are critical to improving the well-being and lengthening the lives of people living with HIV or AIDS (PLWHAs) and their families (Hawkins and Hussein 2002).

In much of sub-Saharan Africa, HIV/AIDS prevalence is affecting current and future food security because an increasing number of families as well as communities are affected by those infected. When an individual from the educated workforce dies, or farmers die, expertise and production are lost. In the worst hit communities, people spend time and money selling assets, lending money, and absorbing orphans into their households. All of these affect income, savings and livelihoods—all of which influence food security. Thus, although not all of the food insecure will become PLWHA, most PLWHA will become food insecure due to the illness' ravages (Cekan 2002).

HIV/AIDS and food insecurity are intertwined in a vicious cycle. HIV/AIDS exacerbates food insecurity and malnutrition, as sickness and death cause declines in work, income, food availability, and time available for care of younger children at a time when more money is required for health care. As food insecurity worsens, the risk of HIV transmission is likely to increase as households are forced into riskier livelihood strategies. Malnutrition increases the likelihood of opportunistic diseases associated with HIV/AIDS and hastens the onset of full-blown AIDS and ultimately death (CARE 2003).

In households affected directly by HIV/AIDS, the food consumption of all surviving family members frequently declines resulting in malnutrition. Malnutrition and HIV can be a deadly combination, threatening the nutritional security of HIV-positive individuals and their families. When food insecurity worsens, the risk of HIV transmission is likely to increase as households are forced into riskier economic alternatives (e.g., migration and transactional sex).

Poor households affected by HIV/AIDS resort to negative coping mechanisms which might address their immediate problem but which can also undermine their children's long-term nutritional status and the family's ability to remain food secure. Chronic ill health and the death of productive adults typically lead households to divest family assets and spend savings at a time when they are earning less; encourage households to withdraw children, particularly girls, from school; increase malnutrition among children; and cause eventual declines in agricultural productivity.

It is evident that HIV/AIDS is inextricably linked to malnutrition, leading to the undernourishment of both the HIV positive individual and their family. Ninety percent of the HIV infections in children are due to transmissions of the virus from the mother to the child during pregnancy, delivery and possibly breastfeeding (Save the Children 2003). Malnutrition, particularly involving vitamin A deficiency, is also associated with an increased risk of genital ulcers and sexually transmitted diseases (Semba 1998), which in turn increase the risk of HIV transmission (World Bank 1993). A malnourished person is more susceptible to parasite infestation (Storey 1993), and chronic parasitosis often leads to chronic immune

activation, which in turn may exhaust the immune system and render it less capable of successfully repelling invaders, as well as hastening the transition from HIV to AIDS (Loevinsohn and Gillespie 2003).

#### ***D. HIV/AIDS and Emergencies***

Humanitarian crises have become epicenters for the transmission of HIV. Population displacement, poverty, powerlessness and social instability, all of which can facilitate HIV/AIDS transmission are further exacerbated during periods of armed conflict, war or extreme food shortages. People affected by emergencies lose access to basic commodities like food, shelter, water, sanitation; services like health, education and social welfare; and various sources of income. The destruction, dislocation, and displacement that emergencies typically cause can intensify vulnerability by increasing the risk of infection among affected populations. In refugee camp settings, disruptions to communal or social standards governing sexual behavior and the breakdown of social/ family networks can also have a profound impact on sexual behavior and thus vulnerability to HIV. In addition, camp settings can increase the incidence of illness of HIV individuals due to an increase in the pathogenic environment, stress and malnutrition.

Many emergencies are complex events that have economic, political, and social consequences at the household level. When faced with emergencies, households are varied in their ability to cope with the effects of the emergency and to prevent it from reaching crisis levels. Focusing on livelihoods during emergencies is crucial because people will go to great lengths to protect their livelihoods, including compromising their nutritional status, social standing or household integrity. When livelihoods fail, such as during times of recurring years of drought or because people have to leave assets behind in flight to avoid conflict, people die. Emergency responses should be designed so that households and communities are equipped to recover their own livelihoods after the disaster.

#### ***E. Manifestations of Vulnerability in Southern Africa***

Recent findings from vulnerability assessments carried out in Malawi, Zambia and Zimbabwe make it clear that food insecurity in Southern Africa cannot be properly understood if HIV/AIDS is not factored into the analysis. The SADC (2002) study clearly indicates that households affected by adult morbidity, mortality, and a high demographic load are significantly more vulnerable to food security shocks than other households. These households suffer from marked reductions in agricultural production and income generation leading to early engagement in distress coping strategies and declines in food security.

Similar findings were highlighted in recent baseline studies carried out by C-SAFE (C-SAFE) in Malawi, Zambia and Zimbabwe. For example, chronically ill individuals were present in 30% of the households surveyed. In Malawi, 60% of the households surveyed fall into one or more of the vulnerability categories. The female headed households carry much of the burden in caring for orphans, with almost half of these households in both Malawi and Zambia hosting at least one orphan child.

Many of the technical background papers presented at this consultation address the HIV/AIDS impact in Southern Africa.

#### **IV. Key Dimensions to Take into Consideration in Indicator Development**

To effectively measure the impact of HIV/AIDS, a range of indicators need to be developed. Indicators need to be identified for effective targeting, as well as gauging the effect of the epidemic on households and communities already suffering from the spread of HIV/AIDS. In addition, indicators are required to monitor and evaluate the effectiveness of mitigation and prevention strategies. These three dimensions will be discussed separately as well as their implications for operating at the micro, meso and macro levels.

##### ***A. Targeting***

Targeting is a dynamic process of defining a group of beneficiaries, identifying members of the target group, and ensuring that assistance actually reaches these intended beneficiaries (Sharp 2001). HIV/AIDS affected individuals and families are among the most socially and economically marginalized populations. Targeting HIV/AIDS affected households for assistance raises a number of difficult challenges.

First, most people are not aware of their HIV status, so it is not possible to simply target this population. Targeting those households with family members who are chronically ill from HIV/AIDS or members who have died from HIV/AIDS could increase the stigma and discrimination associated with the virus, and further increase their vulnerability. Stigma is particularly problematic among women, with most people assuming they are the cause of the infection, rather than just the affected (Cekan 2002). Stigma fosters exclusion, exacerbated by progressive asset depletion and poverty which may further inhibit households from participating in the development process (Kadivala and Gillespie 2003).

Oxfam recommends that targeting of people with HIV/AIDS “should only be undertaken after careful consideration and with participation and consent of the beneficiary group” (Kadivala and Gillespie 2003). To avoid the stigma attached to HIV/AIDS, Gillespie et al. (Gillespie, Haddad et al. 2001) recommend community-based targeting approaches. For safety net or food aid development projects, “using known community structures appears to be the best way to target”. In community targeting, however, it is important to recognize that these targeting mechanisms may reflect the entitlements and inequities embedded in local institutions and power structures (Harvey 2003).

If the aim of the assistance is to address food insecurity, HIV/AIDS may be one of many factors contributing to vulnerability (Harvey 2003). Particularly within high prevalence regions, it may be justifiable to target food assistance to vulnerable groups as defined by communities (Kadiyala and Gillespie 2003). Gillespie et al. (2001) argue that programmes targeting poor, food insecure households that have been impacted by numerous factors should not be considered an inclusion error. Excluding those not affected by HIV/AIDS can exacerbate tension, break social networks, and lead to further exclusion of those affected by HIV/AIDS. Kadiyala and Gillespie (2003) recommend that organizations strive to understand vulnerability within an HIV/AIDS context, involve the community in the identification of vulnerable groups, and design programs based on the needs and constraints of these groups, which will encourage participation of those affected by HIV/AIDS.

A number of groups recommend a two-step targeting process. Targeting should first be done on a geographical scale, to identify those areas most affected and that have had the most difficulty in coping. Within the geographical area, the most vulnerable households and children should be targeted regardless of the cause of their vulnerability (Donahue and Williamson 1999). The affected community is the best source to direct the second level of targeting (Williamson 2000).

### ***B. A Deeper Analysis of Livelihood Vulnerability Resulting from the Impact of HIV/AIDS***

To effectively mitigate the impact of the epidemic on households and communities already suffering from HIV/AIDS, it is necessary to understand how livelihood assets, capabilities, and activities are impacted (Stokes 2002). HIV/AIDS' impact on various classes of capital and assets (natural, human, financial, social, physical) can be tracked at the household, community, and national levels. By examining the possible asset classes through which households and communities are affected and respond to the epidemic, indicators can be identified to determine possible effects. This information is required to design effective mitigation and prevention programs to alleviate the problems created by the epidemic. Mitigation strategies should not only be used to assist communities and households, but also community organizations, meso level institutions, and national agencies.

There are methodological issues associated with separating out the effects of HIV/AIDS from other deleterious effects of recurrent shocks. Any indicator study needs to take into account the major alternative factors that could produce the same or similar effects (Stokes 2002). Detailed knowledge of local conditions should permit the identification of major alternative factors. Similarly, studies of communities with quite different levels of HIV/AIDS prevalence would also assist in this process. Identification and control of these other major factors is essential to the development and implementation of effective mitigation strategies.

Another problem associated with understanding the livelihood impact of HIV/AIDS is the willingness and openness of households, communities, and institutions to discuss the epidemic. Knowledge of the local communities' attitudes and willingness to discuss HIV/AIDS is crucial in determining how a household survey using these indicators should proceed.

A concern with trying to understand the aggregate affect of HIV/AIDS at the national level is that many of the impacts do not show up in statistical measures. While it is possible to document the impact of AIDS in terms of human suffering, lives lost, and asset deterioration at the micro level, estimates of associated macro economic costs have tended to be more modest. A major reason for this masking of HIV/AIDS' affect on aggregate statistics is primarily due to the complexity of the effects. The long run economic costs of HIV/AIDS are much higher than we are led to believe by GDP indicators. This is primarily because HIV/AIDS destroys existing human capital, the transmission of knowledge and capacities from one generation to the next is progressively weakened, and the failure to accumulate human capital becomes more pronounced, slowing down economic growth.

### ***C. Issues Regarding Impact Measurement of Programs***

In the past, most ameliorative efforts addressing HIV/AIDS have concentrated in the health sector and have been directed towards prevention of the infection and care for the chronically ill. Recognizing the importance of a multi-sector approach to address the AIDS pandemic, a number of mitigation and prevention strategies have been developed by governments, UN organizations, and NGOs, as well as the private sector.

While it is not realistic to develop indicators for all possible areas of intervention and programming, there are some outcome measures that will be consistently tracked across households, communities and countries. These programming indicators attempt to capture macro and meso level impacts on enabling conditions, such as resource streams, staff capacities, and changes in policy, as well as micro level behavioral impacts associated with specific sector program interventions. Indicators are also tracking prevalence rates to identify overall trends in program success.

#### *D. Methodological Considerations*

In addition to indicator-specific information, there are a number of contextual issues that need to be considered. Accurate interpretation of indicators requires well-grounded empirical understanding of the context in which access and vulnerability are being measured. Contextual information is essential for proper design and interpretation of indicators as well as for ensuring program success. This can include a large array of information including social, economic and political power, and resource access.

Although these structural factors are often outside the scope and possibility of programs they are the setting in which people live and act and as such directly reflect the limits of intervention impact. These factors can also serve as proxies for vulnerability. This information can be collected at the same time that baseline contextual data is being collected for specific indicators.

It is worthwhile to remember that indicators are context specific and must be adapted to the local setting. As a result, the first step in any evaluation is the contextualization of the survey instrument. The type and depth of data required will vary based on the program type. While the methodology for doing this will have indicator specific requirements, there are some general considerations for increasing the usability of the tools (Tango International 2003).

- **Mis-reporting:** A principal concern whenever collecting information to inform program management is over- or under-reporting by respondents. While data are never expected to be perfect, it is the purposeful mis-reporting that is of concern. The belief that development agencies control large amounts of resources and that interviews may lead directly to household benefits can encourage mis-reporting. This is a concern that relates to nearly all indicators.

While it is impossible to eradicate mis-reporting, it can be mitigated in a number of ways. The first is to explain to the respondents the purpose of the survey. If respondents realize that no direct benefits will result regardless of the response they will be less likely to intentionally provide misleading information. Second, it is necessary to have a well-grounded understanding of the local context and the range of responses that are to be expected. Third, interviewers cannot rely solely on verbal

responses and need to be constantly observant of the surroundings as a way to detect inconsistencies.

- **Seasonality and Timing:** Several of the indicators are season specific and measurement cycles need to coincide with local seasonal calendars. During the collection of background information it is crucial to gain an understanding of the timing of production and lean periods in order to interpret the data. In addition, for all of the indicators that are being used as part of an ongoing evaluation it is essential to conduct the various phases of data collection at the same time of the year in order to reduce confounding factors. In addition, contextual factors (e.g. weather patterns, market irregularities) must be considered.
- **Cost Tradeoffs:** Indicators need to be cost effective. If the cost of measuring a particular indicator is too expensive, it is not likely to be used by agencies implementing those programs. Careful consideration should be given to identifying the most robust and cost effective proxies that differentiate vulnerable groups, capture critical livelihood dimensions associated with HIV/AIDS effects, and/or the intended change brought about by the program.
- **Quantitative versus Qualitative Methods:** Qualitative and quantitative research methodologies are complementary and should be used in combination to effectively understand the impact of HIV/AIDS at various levels. Quantitative measures capture the breadth of the problem, while qualitative measures get at the depth of the problem. Qualitative measures are particularly useful for targeting (social mapping) and understanding livelihood systems at the micro level. To maximize the value of quantitative longitudinal survey data, it is important to undertake connected qualitative studies of subsets of households and families to understand how assets, livelihoods, and other shocks interact, how households and families respond, and how public policy is helping or not (Haddad and Gillespie 2001). With more intensive studies in a given community, however, it is important to take into account issues of confidentiality.

## V. Potential HIV/AIDS Indicators

To develop effective programs to address the HIV/AIDS pandemic, indicators are required for proper targeting, understanding the livelihood changes and increasing levels of vulnerability associated with those changes, and measuring the impact of program interventions. Although there may be overlap between these indicators, they will be discussed separately depending on the use of the indicator.

### A. Targeting Indicators

In many parts of the world, proxy indicators are used to identify vulnerable regions as well as the communities and households within them. As stated earlier a two stage process is often used in targeting. Targeting is first carried on a geographic scale to identify those areas most affected and that have the greatest difficulty in coping. Within these areas, the most vulnerable households are targeted regardless of the cause of their vulnerability. The affected community is often the best source to direct the second level of targeting.

HIV/AIDS proxy variables used by SADC-FANR VAC include the following:

- Morbidity indicators
  - Chronically ill household head
  - Chronically ill adult between 18 and 59
- Mortality indicators
  - Recent household member death
  - Recent death of an adult between 18 and 59
- ‘Hybrid’ morbidity/mortality indicators
  - Highly affected households (death and chronically ill)
  - HIV affected households (death or chronically ill)
- Demographic load indicators
  - Presence of orphans
  - Dependency ratio
  - Number of adults between 18 and 59 years

Morbidity indicators as a targeting proxy are somewhat weakened by the presence of other diseases such as malaria, TB and other chronic illnesses. In terms of mortality, this is usually determined by asking whether an adult died within the last twelve months in households covered in the survey. The presence of orphans as a proxy indicator is often used to identify vulnerable households. The presence of orphans may increase food insecurity and strain the financial position of the receiving household. However, they may also function as a labor source offsetting labor shortages within households (SADC FANR VAC 2003). In terms of dependency ratios, changes in the age composition of households provide some evidence of the impact of HIV/AIDS. Since AIDS related mortality is concentrated in the adult age groups, the ratio between adult and younger members will change. This is often referred to as the effective dependency ratio (De Wall and Tumushabe 2003).

Although these proxy indicators have been used in quantitative surveys carried out in Southern Africa to improve targeting, there may be problems associated with asking direct questions that could exacerbate stigma attached to the HIV/AIDS epidemic. For this reason, organizations such as CARE and World Vision have been using participatory approaches to obtain a more detailed understanding and ultimately better targeting in complex emergencies.

Participatory social mapping, ranking and wealth indicator scoring can be used to identify households adversely affected by HIV/AIDS. Social mapping provides a medium - “the map” - by which villagers can discuss sensitive issues without actually naming or identifying specific households or individuals. In this manner, detailed and reliable information about communities can be obtained in a relatively unobtrusive way. From a recent pilot study to identify and improve targeting methods carried out by CARE in Zimbabwe (TANGO International 2003), the number of chronically ill emerging in the social mapping exercise was consistently higher than those who self-selected themselves into groups. A key factor conducting this type of targeting is that community members actively participate and openly challenge each other’s information without fear of being delisted from future programming efforts. Conducting the social mapping exercise in separate gender groups also can prove to be invaluable, particularly in situations where women are not allowed to openly participate in group dialogues. As custodians of social knowledge within communities, women are well aware of a number of details such as the number of children and which families have

chronically ill members. The social mapping exercise carried out in Zimbabwe indicated that the proxy indicators identified by SADC are valid indicators.

### ***B. Livelihood Impact Indicators***

A number of indicators can be identified to track changes in livelihood assets, capabilities and activities. Table 1 presents a potential list of indicators, by level, that can be used to evaluate links between HIV/AIDS and vulnerability by the five classes of capital or assets. This list is not exhaustive and the indicators have purposefully been defined in general terms; they should be used only as a starting point from which to develop precisely defined indicators according to political, social and environmental context. Moreover, the exact indicator may vary depending on the duration, intensity and prevalence of the epidemic in the local community and on the institutional context in which it occurs. Application of these indicators should only be made in the context of specific information about the local situation in which the data are to be collected.

While it is difficult to prioritize these indicators in terms of their importance in measuring relationships between vulnerability and HIV/AIDS, several considerations should be made when determining which indicators to use in a particular situation. First, the overall goal or objective of the program should be used to help determine the focus of a set of indicators. For example, human capital is an essential component for a project focusing on poverty reduction and alleviation of food insecurity. Indicators of human capital are essential to almost all efforts to examine and mitigate the impacts of HIV/AIDS in the context of attempting to improve rural livelihoods and ensuring food security and should therefore be central to a measurement of the epidemic's impacts. A second consideration when selecting indicators is the focus of the intervention in terms of levels. Clearly, different strategies would be used to conduct a household survey or a community-level qualitative investigation, which in turn dictates the indicators one should measure.

A third consideration should be the stage of the epidemic and the prevalence rate in an affected area. For example, one would not expect large-scale community-level social capital effects in a community that is in the initial phase of the epidemic with a low prevalence rate, whereas a community with higher prevalence rates might well be experiencing significant changes in their social, human and financial capital. One way to look at the stage of the epidemic is to group it into four stages: 1) Not yet infected (focus on vulnerability/susceptibility); 2) affected but asymptomatic (in areas where stigma, discrimination, and exclusion are associated with HIV/AIDS status, people will be reluctant to reveal their exposure); 3) infected and symptomatic (AIDS related illnesses begin to manifest themselves with social isolation resulting); and, 4) AIDS related death (could result in poverty of remaining family members, e.g., orphans and widows who lose assets).

**Table 1. Potential HIV/AIDS Indicators by Vulnerability Context**

<b>Vulnerability Context</b>	<i>Indicators</i>		
	<b>Micro-level (household)</b>	<b>Meso-level (community)</b>	<b>Macro-level (national)</b>
<b>Human Capital</b>	<ul style="list-style-type: none"> <li>• % of hh members with chronic illness</li> <li>• HH adult mortality rate</li> <li>• Dependency ratios over time</li> <li>• # orphans/hh</li> <li>• School enrollment rates over time (by gender)</li> <li>• Loss of hh labor sources (on- farm and off-farm)</li> <li>• # of children working</li> <li>• Rate of out-migration for work</li> <li>• Rate of in-migration to care for sick hh members and/or dependents/orphans</li> <li>• # of hh members engaged in sex work on commercial basis</li> <li>• HIV/AIDS awareness and understanding</li> </ul>	<ul style="list-style-type: none"> <li>• Changes in prevalence of chronic illnesses by gender</li> <li>• Changes in mortality rates by age groups and gender</li> <li>• Changes in nutritional status of children by gender</li> <li>• Changes in typologies of household heads, especially female-, orphan-, and elderly-headed hhs</li> <li>• Changes in dependency ratios</li> <li>• Changes in orphaning rate by gender</li> <li>• In- and out-migration rates of adults</li> <li>• Changes in labor availability by sector</li> <li>• Changes in average age at marriage by gender</li> <li>• Changes in school enrollment rates, esp. drop-out rates</li> <li>• Teachers with HIV/AIDS training</li> <li>• Loss of community leaders, teachers, health care workers, religious leaders</li> </ul>	<ul style="list-style-type: none"> <li>• Mortality rates by age and gender</li> <li>• Morbidity rates by age and gender</li> <li>• HIV/AIDS care centers</li> <li>• Declines in nutritional status of children by gender</li> <li>• # of orphans over time</li> <li>• Net migration rates of adults by gender</li> <li>• Labor availability by sector over time</li> <li>• Increases in school drop-out rates</li> <li>• Loss of government leaders and other important national figures</li> <li>• Loss of hospital personnel and health researchers</li> <li>• HIV/AIDS education and advocacy programs</li> </ul>
<b>Economic Capital</b>	<ul style="list-style-type: none"> <li>• Employment security</li> <li>• Income levels and sources</li> <li>• Income sources in female-headed hhs</li> <li>• (Sexual) division of labor and control of resources</li> <li>• Reallocation of hh labor over time</li> <li>• Knowledge of markets and prices</li> </ul>	<ul style="list-style-type: none"> <li>• Changes in supply and demand for wage labor</li> <li>• Changes in wage rates for unskilled labor</li> <li>• Changes in supply of skilled labor (teachers, health workers, ag extension personnel, etc.)</li> <li>• Decreases in aggregate community assets</li> <li>• Decreases in aggregate community income</li> </ul>	<ul style="list-style-type: none"> <li>• Changes in demand and supply of wage labor</li> <li>• Changes in wage rates for unskilled labor</li> <li>• Changes in supply of skilled labor</li> <li>• Increases in demand for health care and facilities</li> <li>• Increases in demand for loans and credit from formal and informal sources</li> </ul>

	<ul style="list-style-type: none"> <li>• Rates of asset and/or savings liquidation over time</li> <li>• Rates of reliance on credit resources</li> <li>• Expenditures on health, education and funerals</li> <li>• Borrowing patterns from informal sector</li> <li>• Rate of borrowing from money lenders or traders</li> <li>• Rate of commitment of future crops for credit</li> </ul>	<ul style="list-style-type: none"> <li>• Increases in community expenditures for traditional and modern health care</li> <li>• Increases in demand for loans and credit from formal and informal sources</li> <li>• Increases in default rate in credit markets</li> <li>• Changes in lending rates</li> </ul>	<ul style="list-style-type: none"> <li>• Increases in default rate in credit markets</li> <li>• Changes in lending rates</li> </ul>
<b>Natural Capital</b>	<ul style="list-style-type: none"> <li>• Changes in land tenure</li> <li>• Changes in % of land cultivated</li> <li>• Loss of agricultural labor within hh</li> <li>• Loss of agricultural production knowledge base (regarding land preparation, cropping plans, animal husbandry practices, etc.)</li> <li>• Changes in farming strategies (e.g., declines in crop diversity) Changes to less labor-intensive farming methods</li> <li>• Distress selling of land or livestock</li> <li>• Attendance rates to extension meetings</li> </ul>	<ul style="list-style-type: none"> <li>• Changes in land use patterns</li> <li>• Reduced quality of communal landholdings (for farming or pasture)</li> <li>• Changes in land market</li> <li>• Less land committed to conservation efforts</li> <li>• Changes in amount of land in fallow</li> <li>• Declines in biodiversity</li> <li>• Reduction in visits of agricultural extension educators</li> <li>• Loss of personnel of agricultural credit banks and market agencies</li> </ul>	<ul style="list-style-type: none"> <li>• Amount of land under protective status</li> <li>• Changes in land use patterns</li> <li>• Extent of environmental degradation in general</li> <li>• Government programs supporting conservation tillage, etc. in agricultural production (apprentice training for orphans)</li> <li>• Government programs supporting land and water resource conservation</li> <li>• Declines in biodiversity</li> <li>• Changes in labor availability for agric, extension education programs</li> </ul>
<b>Social Capital</b>	<ul style="list-style-type: none"> <li>• Reliance on extended family for labor, domestic work, or child care</li> <li>• HH participation in community labor sharing arrangements for: agricultural production, child care,</li> </ul>	<ul style="list-style-type: none"> <li>• Change sin marital status</li> <li>• Changes in kinship patterns, esp. extended families</li> <li>• Changes in rates of orphans in or out fostered</li> </ul>	<ul style="list-style-type: none"> <li>• Breakdown of urban/rural support networks</li> <li>• Disintegration of communities</li> <li>• More pronounced social inequalities</li> <li>• Increasing demands for care for sick, care</li> </ul>

	<p>housework</p> <ul style="list-style-type: none"> <li>• Nature of participation in relevant community groups, i.e., support groups, HIV/AIDS help organizations</li> <li>• (Sexual) division of power</li> <li>• Perceptions of time availability to be with friends, family</li> </ul>	<ul style="list-style-type: none"> <li>• Changes in patterns of child care</li> <li>• Changes in labor-sharing systems</li> <li>• Changes in community organizations – roles, structure, membership</li> <li>• Increased demand for apprentice training for orphans and other vulnerable children</li> <li>• Rate of community disintegration</li> </ul>	<p>for orphans and community and national-level social service organizations</p> <ul style="list-style-type: none"> <li>• Decreasing numbers of skilled staff to work in national and/or international organizations addressing HIV/AIDS issues and related problems</li> </ul>
<b>Physical Capital</b>	<ul style="list-style-type: none"> <li>• Changes in condition of dwellings</li> <li>• Decline in quality of hh assets such as bicycles, appliances, livestock, etc.</li> <li>• Decline in condition of livestock, land</li> <li>• Distress selling of livestock, hh goods, or land</li> </ul>	<ul style="list-style-type: none"> <li>• Deterioration rates of community facilities including building, roads, wells, etc.</li> <li>• Decline in condition of communal land or livestock</li> </ul>	<ul style="list-style-type: none"> <li>• Declines in condition of water treatment systems, sewage treatment systems, roads, terraces, irrigation ditches, and all public facilities including schools</li> </ul>

Finally, the extent of awareness and perceived seriousness of the epidemic by a community or nation is another criterion in selecting indicators. Communities that have experienced the loss of significant numbers of their population to HIV/AIDS and view the epidemic as threatening are more likely to show community-level effects than those places with little awareness, and that are unable or unwilling to discuss the epidemic

### ***C. Program Outcome Measures***

Outcome indicators need to be developed to assess the progress and results of HIV/AIDS responses and to adjust strategies as necessary to enhance performance. Indicators can be grouped at multiple levels. At the household and community level, indicators can be identified to track changes in awareness and behavior. Specific indicators can be used to track changes brought about in HIV/AIDS prevention programs in high risk groups, home-based care for chronically ill adults, support to orphans and vulnerable children, and mother-to-child transmission.

At the meso and national level, indicators can be used to track prevalence rates as well as systemic and behavioral changes that are occurring within institutions, as well as policy changes. For example, agencies can track percentage of schools with teachers who have been trained in HIV/AIDS prevention and life-skills education, amount of national funds spent by governments on HIV/AIDS, percentage of people with advanced HIV/AIDS infection receiving appropriate antiretroviral combination therapy, percent of young people between the ages of 15-24 who are HIV infected, and percentage of HIV/AIDS infants born to HIV/AIDS infected mothers.

At the global level, indicators can be used to track changes in resource commitments provided by donors, governments, and private sector. Indicators can also be used to track employment policy changes in the workplace for government, international organizations and private companies.

## **VI. Conclusion**

The impact of HIV/AIDS on the livelihood systems found throughout sub-Saharan Africa exacerbates the underlying vulnerability leading to large scale emergencies of epic proportions. To address this adverse impact, emergency and development programs must target limited resources effectively and decrease the negative impacts of the pandemic on household livelihood assets. Timely and effective responses can support household and community existing networks and innovative action, which is our first defense to this growing scourge. By tracking the institutional changes that are brought about at the meso and macro levels resulting from this increased vulnerability, efforts can be made to reduce the erosion of government's ability to deliver services, maintain growth, and encourage good governance. The argument is clear that HIV/AIDS should be considered a crucial emergency and development issue worthy of colossal response due to the negative impact it is having on mortality and livelihoods. Given the scale of this pandemic's impact, individual agencies must work in partnership to combat this threat in a collaborative and coordinated manner.

## References

- CARE (2003). *Managing Risk, Improving Livelihoods: Program Guidelines for Conditions of Chronic Vulnerability*. Nairobi, CARE East and Central Africa Regional Management Unit.
- Cekan, J. M. (2002). *Food Security - HIV/AIDS Best Practices/Issues*, American Red Cross International Unit.
- Chambers, R. (1989). *Vulnerability, Coping and Policy*, IDS.
- C-SAFE, Consortium for Southern Africa Food Security Emergency.
- De Wall, A. and J. Tumushabe (2003). *HIV/AIDS and Food Security in Africa*, Department for International Development.
- Devereux, S. (2002). "The Malawi Famine of 2002." *IDS Bulletin* **33**(4): 70-78.
- DFID (2000). *Sustainable Livelihoods Guidance Sheets*. London, Department for International Development.
- Donahue, J. and J. Williamson (1999). *Community Mobilization to Mitigate the Impacts of HIV/AIDS*. Washington D.C., Displaced Children and Orphans Fund.
- Ellis, F. 2002. *Livelihoods and Rural Poverty Reduction in Malawi*. LADDER Working Paper No. 17. July.
- Gillespie, S., L. Haddad, et al. (2001). *HIV/AIDS, Food and Nutrition Security: Impacts and Actions*. ACC/SCN Nutrition and HIV/AIDS. Nutrition Policy Paper 20. Geneva, ACC/SCN.
- Haddad, L. and S. Gillespie (2001). *Effective Food and Nutrition Policy Responses to HIV/AIDS: What We Know and What We Need to Know*. Washington D.C., IFPRI.
- Harvey, P. (2003). *HIV/AIDS: What are the Implications for Humanitarian Action? A Literature Review*. First Draft. United Kingdom, Overseas Development Institute.
- Hawkins, K. and K. Hussein (2002). *Impact of HIV/AIDS on Food Security*, ODI.
- IRIN (2002). *Ethiopia: Focus on AIDS and the Elderly*.
- Kadiyala and S. Gillespie (2003). *Rethinking Food Aid to fight AIDS*, FCN.
- Kadiyala and S. Gillespie (2003). *Rethinking Food Aid to fight AIDS*, FCN.
- Loevinsohn, M. and S. Gillespie (2003). *HIV/AIDS, Food Security and Rural Livelihoods: Understanding and Responding*. Washington D.C., ISNAR, The Hague and IFPRI.
- Moser, C. O. N. (1998). "The Asset Vulnerability Framework: Reassessing Urban Poverty Reduction Strategies." *World Development* **26**(1): 1-19.
- SADC FANR VAC (2003). *Toward Identifying Impacts of HIV/AIDS on Food Insecurity in Southern Africa and Implications for Response: Findings from Malawi, Zambia and Zimbabwe*. Harare, Zimbabwe.
- Save the Children (2003). *Food Security and Children: Investing in the Future, Save the Children*.
- Semba, R. A. (1998). "The Role of Vitamin A and Related Retonoids in Immune Function." *Nutrition Reviews* **56**(1): 38-48.
- Sharp, K. (2001). *An Overview of Targeting Approaches for Food-Assisted Programming*.
- Stokes, C. S. (2002). *Measuring Impacts of HIV/AIDS on Rural Livelihoods and Food Security*. Draft. Rome, Gender and Population Division, Food and Agricultural Organization.
- Storey, D. M. (1993). "Filariasis: Nutritional Interactions in Human and Animal Hosts." *Parasitology* **107**: 147-158.
- Tango International, I. (2003). *Food Access Indicator Review*. Washington D.C., Food and Nutrition Technical Assistance, Academy for Educational Development.

- TANGO International, I. (2003). HIV/AIDS Prevention and Protection Initiative: A Methodology for Targeting Assistance to HIV/AIDS Affected Households in Zimbabwe. Harare, Zimbabwe, CARE-Zimbabwe.
- UNAIDS. **2003**.
- UNAIDS (2002). 14th International AIDS Annual Conference, Barcelona, Spain.
- USAID/ICRW (2002). Food Security and HIV/AIDS Programming. Meeting Notes. Washington D.C., Population Council/Horizons and ICRW.
- Webb, P. and A. Harinarayan (1999). "A Measure of Uncertainty: The Nature of Vulnerability and its Relationship to Malnutrition." Disasters **23**(4): 292-305.
- Williamson, J. (2000). Finding a Way Forward: Principles and Strategies to Reduce the Impacts of AIDS on Children and Families.
- World Bank (1993). Sexually Transmitted Infections: Prevention and Care Project, Zimbabwe, World Bank.