



RENEWAL Working Paper No. 2

**HIV/AIDS, Food Security and Rural Livelihoods:
Understanding and Responding**

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1 INTRODUCTION

There is hardly need these days to repeat that HIV/AIDS is devastating African societies and economies, threatening the hard won human development gains of the past several decades. Without decisive action, other developing and transitional societies are at risk of gaining similar experience.

“AIDS is a development problem, not just a health issue” has become a mantra in recent times, but what does it mean in practice? The changes to the development landscape wrought by AIDS demand a review of existing development actions at many levels, from households seeking to secure viable livelihoods, to policymakers attempting to better understand and internalize the implications of AIDS for their own sectoral goals and strategies. Though one of the UN Millennium Development Goals is to “combat HIV/AIDS, malaria and other diseases”, it is increasingly clear that – unless AIDS is brought under control – most, if not all, of the remaining outcome goals are unlikely to be achieved². A truly multi-sectoral approach to addressing HIV/AIDS in the context of people’s livelihoods is essential.

In this paper, we describe the kinds of understanding and responding that are needed for agriculture, food and nutrition-relevant organizations to effectively confront HIV/AIDS. First, we outline some underlying principles that need to be grasped in order to understand the variable and changing nature of AIDS epidemics. Key concepts here include the variance among different epidemics and the notions of susceptibility, vulnerability, resistance and resilience. We illustrate these concepts through describing the particular interactions between food and nutrition insecurity and HIV/AIDS, and their implications for response strategies.

Second, we examine the implications of this understanding for the ways in which different people – in affected households, communities and in affected sectors -- may best respond. We focus on the particular importance of food and nutrition for the four conventional aspects of response -- prevention, care, treatment and mitigation – and why it is a mistake to compartmentalize these approaches. The imperative and different rationales for multi-sectoral mainstreaming are then discussed.

And third, we move on to describe a flexible and evolving aid, the HIV/AIDS lens, and the processes through which agricultural and other professionals can learn to employ it in order to respond more effectively. We highlight the fundamental principles that comprise the lens and then illustrate how it can be used in practical situations to review agricultural, food and nutrition policies and programs at different levels. The paper draws on the experience of countries participating in RENEWAL (Regional Network on HIV/AIDS, Rural Livelihoods and Food Security³) where the lens and the processes in which it is being put to use are being refined. As we make clear, the lens is not a static

² Without making significant headway with AIDS prevention and mitigation, the halving of poverty and hunger, universal primary education, elimination of gender disparity in education, the reduction by two-thirds of child mortality, and improving maternal health, will all remain unreachable goals.

³ RENEWAL is a country-driven initiative, co-facilitated by ISNAR and IFPRI, and described in www.isnar.org/renewal

construct, rather, its distortions are hopefully reduced through practice and shared experience in using it. Action research by sector organizations is key to this process of refinement and learning. A recent workshop explored methodological challenges and opportunities in research and evaluation (RENEWAL 2003). Two forthcoming RENEWAL publications will synthesize these methodological issues and describe the development of networks to advance practical understanding.

The experience we draw on and the illustrations we use here are primarily from sub-Saharan Africa where the impacts of HIV/AIDS are most widespread and severe at present. The primary focus is on agriculture, rural livelihoods and food security because these are the predominant concerns of most people affected by HIV/AIDS. There is also evidence that the agriculture sector is less able than most other sectors to absorb the human resource losses associated with the pandemic. The principles and approach we highlight are however likely to be of wider relevance and interest both to other sectors and other regions where, regrettably, HIV/AIDS epidemics are fast developing.

2 UNDERSTANDING HIV/AIDS

Many Different Epidemics

There are common features concerning HIV/AIDS epidemics but there is also important variation. One common feature is that HIV/AIDS epidemics are long-wave phenomena, though the fact that there are several waves – of HIV infection, opportunistic infections, AIDS, death followed by the impact wave -- may be less well understood. A few countries appear to be over the peak of the first wave, including Uganda, Thailand, Brazil. But no country has yet reached the crest of the AIDS mortality wave and the impact wave is only just beginning for the majority of affected countries. This fourth wave, which may include social and political destabilization, will engulf countries for decades to come. It will demand massive responses at many levels.

Yet, while HIV/AIDS is now global in its spread and devastating where it becomes generalized, it is important not to lose sight of the fact that what we confront is not a single uni-causal epidemic but many differentiated ones. The determinants of HIV's spread are rooted in poverty and in inequality, and these create local situations of risk (Farmer, 1999). Infection rates and trends are sometimes found to vary dramatically, often over quite short distances (Ngwira *et al*, 2002). The patterns of population movement and interaction, the locales where sex is transacted that determine risk are diverse in nature and may change with time. Access to food and livelihoods are often fundamental to people's choices. Similarly, the consequences of AIDS-linked illness and death, which reverberate through households, extended families, communities and beyond, are shaped by features of agricultural and livelihood systems -- for example access to labor-saving technologies or the nature of social safety nets -- and by pre-existing patterns of food insecurity.

AIDS is Endogenous to Livelihood Systems

Not only is HIV/AIDS variable in time and space, it is also affected by a range of actions and interventions. HIV is not an exogenous force, like a cyclone, but endogenous to livelihood and agricultural systems that are shaped by human actions at many levels. “We are all affected” is a common slogan. But it is equally true that we all affect. Policies and programs of many sorts affect -- for example, patterns of movement and access to livelihood alternatives -- and hence may influence, positively or negatively, people’s susceptibility to HIV or their vulnerability to AIDS’ consequences. Not all these links are immediately obvious; indeed some may be counter-intuitive. For example, stimulating the creation of labour-attracting rural industries and plantations that exploit local comparative advantages and resources has been a pillar of development policy for decades. That the programs that pursue it may inadvertently create conditions that hasten the spread of HIV in rural areas and ultimately do more harm than good may not be an easy idea to get one’s head around.

Learning about HIV/AIDS, Food and Livelihoods

To confront vector-borne diseases like sleeping sickness (trypanosomiasis) or river blindness (onchocerciasis), diseases that have added greatly to the burden falling on rural Africans and obliged them to alter the way they use the land, the knowledge that needs to be fostered is of a specific kind. These diseases are restricted to particular habitats and habitat conditions and affect particular groups disproportionately. But generalized epidemics require generalized understanding. Because the situations of HIV/AIDS risk are widespread, shaped by diverse and locally specific factors and influenced by many persons’ actions, a broad range of people acting at different levels need to become more conscious of how what they do may be enhancing or reducing risks. They will need more than simple messages and guidelines to be effective. They must be able to look at situations – the features of food insecurity in an area for instance – and their own actions (e.g. marketing policies in the case of a Ministry analyst or the management of local grain banks for a community group) and assess how they are relevant to HIV/AIDS risks. The task of nurturing that broad-based capacity seems daunting but we are by no means without examples and experience on which to draw.

There is first the growing understanding that many Africans have gained of the causes and consequences of HIV/AIDS. They are learning to recognize and avoid situations of HIV risk in their personal lives and to reduce AIDS’ consequences, for example by taking in orphans. There is good evidence of this happening in a few countries, particularly Uganda, where discussion has been comparatively open and widespread, encouraged by the long standing commitment of national leaders and underpinned by many people’s direct experience of AIDS in their families and workplaces (Low-Beer *et al*, 2000). Several methods have been designed to focus and strengthen this learning. One such is Stepping Stones (Welbourne 1998), which enables people to identify the sources of risk that they confront and what they can do to diminish or avoid them. It is a group-based approach that can be adapted to different situations and that draws on people’s own experiences.

Second, there is growing experience with the management of change in agriculture. Farmers and other resource users in many developing areas are confronting changes in the systems they manage that are for them rapid and unprecedented. The causes are diverse, including the collapse of established markets, extreme weather events linked to climate change, the emergence of new pests or diseases and the degradation of and sharpening conflict over critical natural resources. In a growing number of such situations, research and development (R&D) workers have sought to support farmers in rethinking their decision-making. Their methods typically comprise two main elements: a learning process and a tool or aid of some sort designed to help farmers grasp something that is deemed to be critical about the systems they manage. Usually, it is an aspect or aspects that are poorly visible or difficult to make out or express. In pest management, for example, it is often the existence and role of the pest's natural enemies and the capacity of crops to compensate for a degree of pest damage if they are otherwise healthy and well nourished. Farmers learn about these principles by discovery, experimentation and through learning-by-doing in groups where planning, action and reflection are shared (Loevinsohn *et al.* 2002; Van der Veen 2000). Whether consciously or not, the methods promote constructivist learning and "problem-solving transfer" – the ability and confidence to devise solutions for new problems that may be encountered (Mayer 1999). The Farmer Field School is perhaps the best-known and most widely employed example of such an approach, but it is by no means the only one and farmers are not the only professional group to benefit from them (Loevinsohn 2002,). These methods share several traits in common with HIV/AIDS education approaches like Stepping Stones, including group discussion and reflection on immediate experience. In both contexts, the focus is not on messages but on principles and their practical application.

Enabling people to link the personal and professional realms is key to securing that broad-based capacity to confront HIV/AIDS epidemics. Beyond individual choices and behaviour, agricultural professionals need to understand the wider determinants in and around rural livelihoods and food security that shape the risks people face. At best, this is happening now only very slowly. Even in Uganda's favourable social and policy environment, most farmers, agricultural researchers, development workers and policy makers are still unable to see how what they do for a living may contribute to HIV/AIDS' prevention or mitigation. We need to design efficient learning processes for these agricultural professionals if they are to make a real difference.

This is not a sideshow of the struggle with AIDS; indeed it may well prove central to it. Historically, changes in the wider determinants that shape people's risks of major diseases have often made large contributions to changes in health. For example, in Europe, North America and among white South Africans, the prevalence of tuberculosis fell precipitously through the final decades of the 19th century and the first decades of the 20th, before effective treatment became available, primarily as a result of improved living conditions and nutrition. The experience of black South Africans, who confronted discriminatory racial policies and whose living conditions deteriorated, was very different (McKeown 1988, Packard 1989). These changes, positive and negative, occurred as unforeseen by-products of broader developments and over a span of decades. In the case of HIV/AIDS, the challenge we face is to bring about an informed and conscious management of those links, with results visible in years.

Susceptibility, Risk and Resistance to HIV

The HIV/AIDS lens that agricultural, food and nutrition professionals need builds on the lens that they are learning to use as citizens. Among the common and basic principles that comprise the lens are those pertaining to the biology of HIV. Currently, two routes of infection are dominant in the region: heterosexual contact and mother-to-child transmission (MTCT). Elsewhere and at other times, other routes have been important such as men having sex with men (MSM) and contaminated blood transfusions and the use of contaminated needles in medical injections.

A few concepts can help to understand how food insecurity and rural livelihoods influence these HIV risks.

- *Susceptibility* relates to the chance of an individual becoming infected by HIV. It has two components: a) the chance of being *exposed* to the virus, which in turn relates to i) the risk environment and specific situations of risk that the person confronts, and ii) the *riskiness* of her/his behaviors (both of which may be related), and b) the chance of being *infected* with the virus once exposed.
- *Resistance*, on the other hand, is the ability of an individual to avoid infection by HIV, either by escaping exposure or, if exposed, by escaping infection.

A number of factors combine to influence behavior and to shape risk environments and situations:

- *Asymmetric sexual relations*: The chance of being exposed to HIV is increased where a small number of women have unprotected sex with a larger number of men, or vice versa. Epidemiological models show that such asymmetrical relationships hasten the spread of infection in a population (Garnett and Anderson, 1996).
- *Movement*. Where people move into and out of, or between situations of risk, they can contribute to widening the epidemic and raising infection rates in areas or among groups previously little touched. There would be no generalized HIV/AIDS epidemic if people did not move.
- *Inequalities*. Inequalities of several sorts are central to the risks of exposure that people face (Farmer, 1999). Social, economic and gender inequalities shape the sexual relationships they enter; geographic disparities affect their decisions on movement.

In RENEWAL's early experience working with agricultural professionals to identify the elements of agricultural and livelihood systems that are contributing to susceptibility or resistance in particular contexts, we have found that a generic "map" as in Figure 1 is often helpful. The influences that need to be considered are situated at different spatial and social scales. The wider determinants influence the more local ones, leading ultimately to HIV infection. In what follows, we highlight some of what appear on present knowledge to be common determinants and the pathways of their influence in

sub-Saharan Africa. The contributions of livelihoods and food security can be said to end with an individual's exposure to the virus.

Micro-biology

At the microbiological and physiological level, the probability that this exposure results in infection is influenced by prior infection, notably by STDs, and by nutritional status. Micronutrient deficiencies, for example, increase the likelihood of mother-to-child transmission (Piwoz and Preble 2000) and may lower the resistance of the mother's epithelial tissue to penetration by HIV.

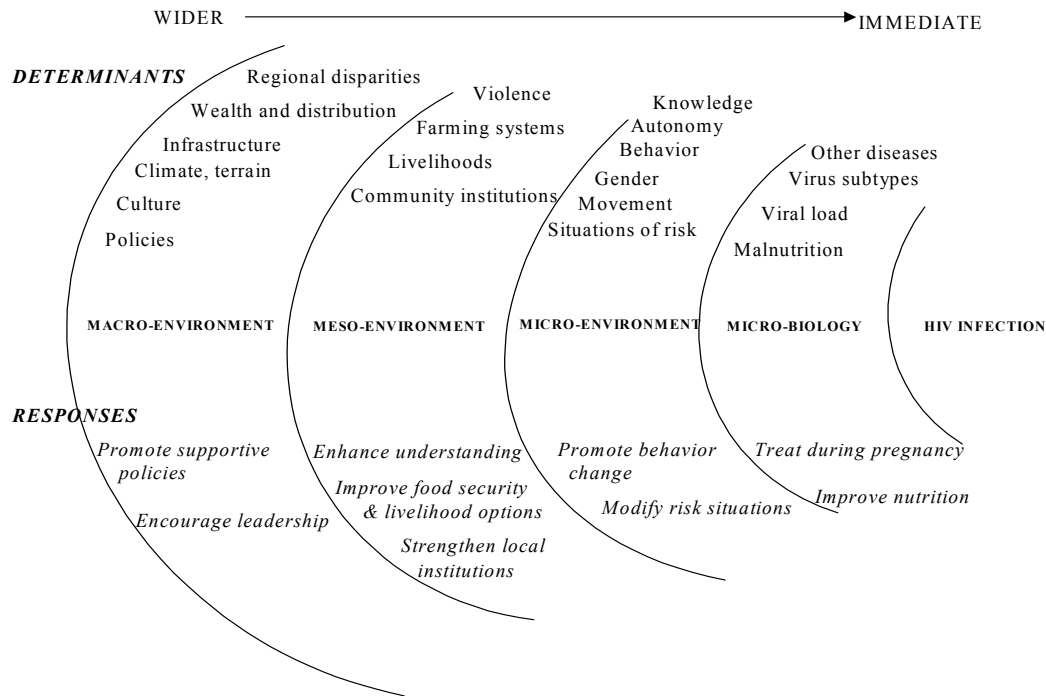
It is well known that malnutrition and infection become intertwined in a vicious cycle (Scrimshaw et al 1968, Tomkins and Watson 1989). When the infection is with HIV, the cycle turns faster, and there are some important HIV-specific interactions (Semba and Tang 1999). Malnutrition, particularly involving 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). It has been suggested that HIV may have more opportunities to mutate into more virulent variants in a pool of malnourished hosts (Semba et al 1994, Domingo 1997). 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 (Bentwich et al 1995).

Mother-to-child transmission (MTCT) of HIV is the second most important route of infection in sub-Saharan Africa and the principal risk factor is the health of the mother. Mothers with relatively good immune status are far less likely to transmit the virus to their infants than mothers with poor immune status⁴ (Leroy et al 2002; Fawzi et al 2002). This is a major finding with profound implications. Maternal immune status in turn is strongly related to her nutritional status (Tomkins and Watson 1989). We also know that if a pregnant woman is seriously nutritionally depleted – particularly, but not only, with regard to anemia – she is more likely to die in childbirth, with major consequences for the chances of survival of the child (Ross and Thomas 1996). Also, on the child's side, we know that better women's nutrition before and during pregnancy increases birth weight and improves the infant immune status -- thus reducing several child-side risk factors too (Allen and Gillespie 2001). This is one fact that has not changed from pre-AIDS times – better maternal nutrition clearly benefits both the mother and child.

⁴ Recent data from West Africa and Tanzania illustrate this relationship. In a West African study, investigators reported that postnatal transmission (measured from 6 weeks through 24 months in breastfeeding infants) was 10 to 14 percent in mothers with baseline CD4 counts below 500 (measured in pregnancy), while transmission was less than 3 percent during this same time period among women with baseline CD4 counts \geq 500 (Leroy et al, 2002). In a Tanzanian study, postnatal transmission risks were 2.13 and 2.99 times greater in women with CD4 counts below 200 and between 200-499 cells/ μ l, respectively, when compared with women who had CD4 counts \geq 500 in pregnancy (Fawzi et al, 2002).

The importance of the environment at all levels in disease transmission was first highlighted first by Louis Pasteur who stated “*the microbe is nothing, the terrain everything*” (quoted by Stillwaggon 2002). The first level of terrain, as described above and shown in Figure 1, is an individual’s nutritional status.

FIG 1: HIV/AIDS EPIDEMICS: DETERMINANTS AND GENERIC RESPONSES



Adapted from Barnett and Whiteside (2002)

Micro-environment

The microenvironment is that of the individual and the most immediate influences on behavior. In countries where the epidemic is now well advanced, surveys generally find that adults in large proportions know about HIV, how it relates to AIDS and how infection can be prevented. However, their ability to act on that knowledge, their autonomy, is often constrained (UNAIDS 1999; Malawi Government, 2001a). The subservient status of especially young women appears to be a central feature of the risk environments of southern and eastern Africa. Older men, who are at higher risk of being HIV positive, and who are also more likely to have moved in the past, for shorter or longer periods, are able to dictate the terms under which they have sex with young women. This appears to be behind the widespread observation that HIV infection among 15-19 year olds is many times higher in women than in men (Malawi Government 2001b).

Food insecurity further undermines women’s autonomy. In many cases, younger and older women feel obliged to find food for their families and will sell sex for cash or kind as a last resort. In northern Tanzania, Gabriel Rugalema (pers. comm. 2000) recounts a man telling him: “*It’s like this here now. If my wife goes out in the afternoon and comes back with a bowl of maize flour, I don’t ask her where she got it*”. The authors have heard

almost identical words from men in Uganda and Malawi: only the commodity in question and the relationship (wife, sister or daughter) differed. The mission may be less than voluntary. Near Zomba in South Malawi, a young woman described girls being sent out to find paraffin at 4 pm, or after dark, during the current food crisis. These links are sensitive, critical and poorly described.

Besides these diffuse situations of risk, replicated in many places, there are often more focused ones where sex is transacted in hazardous circumstances not far from home. In Malawi and Uganda, these include rural weekly markets and trading centers. In a recent survey in Malawi, informants described these places as important sites of social and sexual contact between rural and urban people, and among people from different rural areas. Market operating times were said in some cases to favour sexual relations more than commercial ones (Bota *et al.* 2001, Ngwira *et al.* 2002). Respondents suggested that if markets opened and closed earlier, some of these risks could be reduced. Marketing and financial arrangements for commodities like tobacco, sugar cane and fish often draw men and women away from their families for extended periods and were also seen to be situations of risk in rural communities.

Meso-environment

More widely, in what can be called the meso-environment, are plantations and related agricultural industries, in Malawi and Uganda typically dealing with tea, coffee, tobacco, sugar cane and rice, which are also often associated with situations of significant risk. Common features that contribute to the risk are: high and seasonal demands for labor; workers moving on their own, sometimes from considerable distances and lodged in single sex dormitories; long and often irregular pay intervals and a dependent population of occasional and/or commercial sex workers from nearby villages or further afield (Ngwira *et al.* 2002, Kisamba Mugerwa and Nduhura *in press*). Ownership structures, the national policy environment and the economics of the industries are said to be important influences on the persistence of these features.

The inability of local agricultural systems to provide people and especially young adults with adequate livelihood opportunities is often behind their decisions to move, whether to other farming areas, rural industries, towns or cities on a seasonal or longer term basis. The size of holdings, local practices and customs relating to inheritance, the extent of resource depletion and the employment possibilities in value addition and marketing are among the “push” factors in people’s decision making. It is important to note that it is not movement *per se* that puts people at risk of HIV; rather it is the conditions under which it occurs. Much of the literature in this area emphasizes movement by single adults, “alone and lonely”, but little of it addresses the specific rural situations that are of concern here.

Macro-environment

Finally, in the macro-environment, a range of factors influence the productivity and sustainability of agricultural and livelihood systems. These include climate, geography and the larger features of physical infrastructure such as major road links. Policies of

various sorts and the programs that implement them are also situated here and influence risks. Several have been implicated as contributing to the current food crisis in southern Africa, such as the decision in Malawi to reduce the strategic grain reserve (Devereux 2002) and the land distribution program in Zimbabwe (IDC 2003). Their contribution to susceptibility through the kinds of links described above have yet to be well documented. But the decisions and policy processes at play go beyond the national arena. The market liberalization policies that Mataya (2000) claims increased food insecurity among small producers were influenced by decisions in and pressures from Northern-based institutions.

Recognizing resistance

It is vital that we consider at each of these scales not just the factors that contribute to susceptibility but also those that make people more resistant. In our still limited experience with facilitating reflection among agricultural professionals on the links between agricultural and livelihood systems and HIV/AIDS, we have found that the latter are considerably the more difficult to grasp and identify. In one sense, resistance can be seen as merely the contrary of susceptibility: if food insecurity contributes to susceptibility then food security promotes resistance. If that was all there was to it, there would be no need for both terms. But where susceptibility emphasizes static and passive characteristics, resistance includes those that are active and that draw on strengths. At each level, these involve processes of awareness, recognition and response.

- At the microbiological level, resistance includes the crucial though imperfect immune responses to HIV and opportunistic infections;
- At the individual level, a person aware of HIV and recognizing the risks s/he faces, does something different. Our particular concern here is with innovations in or around agriculture, but they also occur in other realms. For example, a young rural woman who sees few prospects for inheriting land or otherwise making a living, realizes that it would be possible to grow vegetables out of season by the river using a treadle pump and to sell them at a good profit in town.
- At the household level, her parents, recognizing the risks young people like her face, agree to her using a patch of riverside land they now farm themselves.
- At the community level, the young woman discusses and refines her idea with other members in the Anti-AIDS Club organized by a local church. Several decide to join her and lobby for funds for the pump and for more land from village leaders.
- Local government and NGOs, realizing that her idea and others it may have spawned are spreading, sponsor a series of specialized Farmer Field Schools aimed at young adults in the district that support their learning about life skills, vegetable crop management and marketing.
- At the national level, a farm radio program picks up the story and airs it. The Ministry of Agriculture takes note and expands its technical support to Field School programs and the development of locally relevant curricula.

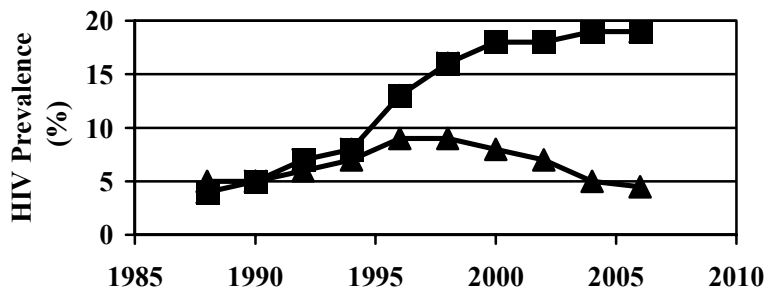
In each case, the response involves some element of innovation and, above the microbiological level, of borrowing, modifying and combining existing and accessible

components – technical and social. There is a dearth of research into the sources of resistance and how resistance can be effectively supported. We will need to bring to bear our understanding of innovation processes. We return to this below.

The responses described above, from the individual to the national level, are illustrative but are not our invention: they are being planned or are already underway in different parts of Malawi and Uganda where RENEWAL partners are working. As we suggest below, the effectiveness of these responses would likely be enhanced were they brought together and linked, the “wider” ones supporting the more “immediate” ones. But how would we recognize such effectiveness? What does resistance to HIV look like in the field?

Resistance can be assessed at each of the levels of decision-making. Individuals or households that remain HIV free when others, similarly situated, are infected can be considered resistant. So too can communities, districts or countries that have a lower HIV prevalence than other, similarly situated social units at a particular moment and that, over time, have a trajectory of prevalence that lies below them (Figure 2). By “similarly situated”, we mean that people in these units confront similar risk environments and situations. A village distant from roads and towns but with abundant resources and minimal food insecurity may maintain low prevalence relative to other villages largely by virtue of its inhabitants being minimally exposed. Sampling error could also be responsible for the variation in prevalence we observe. Prevalence below what one would expect combined with evidence of a response to the HIV threat that enables people to escape these risks would constitute the “gold standard” of resistance. Decosas (2001) and Thomas *et al.* (1999) promote a similar concern with the outliers – in their cases communities with HIV or STD prevalence above or below expectation – and the factors responsible. Action research in Malawi and Uganda supported by RENEWAL will be developing operationally feasible and locally meaningful definitions of resistance.

Fig 2. Illustration of resistance to HIV at the community level
 (The lower curve represents a relatively resistant community)



Vulnerability and Resilience to AIDS Impacts

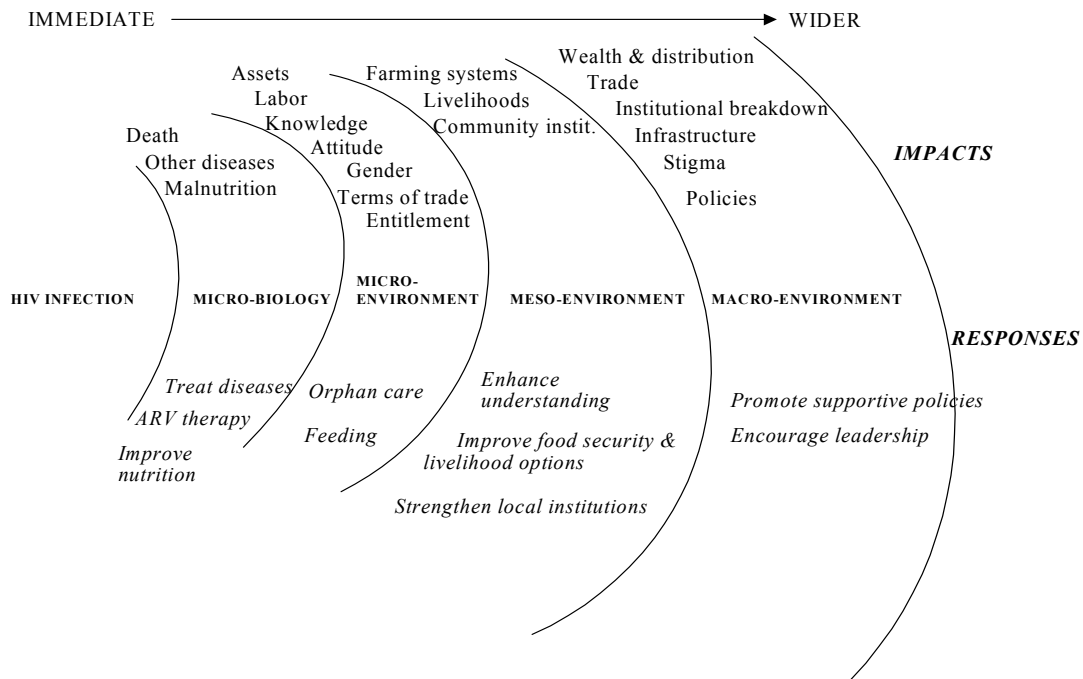
If we have dwelt long on the contributions of food security and livelihoods to risks of and resistance to HIV, it is because, in our experience, this proves harder for agricultural, food and nutrition professionals to grasp than the impacts of AIDS-linked illness and death on food security and livelihoods. In a sense, AIDS, though large, is just one of the many disasters with which the rural people of Africa are learning to live. But the diverse ways in which AIDS can affect rural societies and economies are not always obvious, and less so the sources of strength that confer some resilience to those impacts.

Vulnerability differs from susceptibility in that it refers to the likelihood of significant impacts occurring at a certain level (e.g. individual, household, community level etc). These impacts are not one-time events, they are *processes*, often hidden, slow-moving, but destructive. These processes are often punctuated by events, such as the sale of assets, some of which are irreversible, leaving the household – if indeed it survives – significantly impoverished.

Resilience bears a similar relation to vulnerability as resistance does to susceptibility. It refers in particular to the active responses that enable people to avoid the worst impacts of AIDS at different levels or to recover faster to a level accepted as normal. Again, we have found a generic “map” is often helpful to agricultural professionals trying to identify the sources of vulnerability and resilience in particular situations (Fig. 3). Note that the arcs representing different levels of organization in this and Figure 1 can be joined to form concentric circles with infection at the middle, and time running from left to right, emphasizing the systematic relationship between susceptibility/resistance and vulnerability/resilience, a matter to which we will return below.

We focus here on what appear on present knowledge to be some of the most widespread and common impacts, and some of the major gaps in understanding.

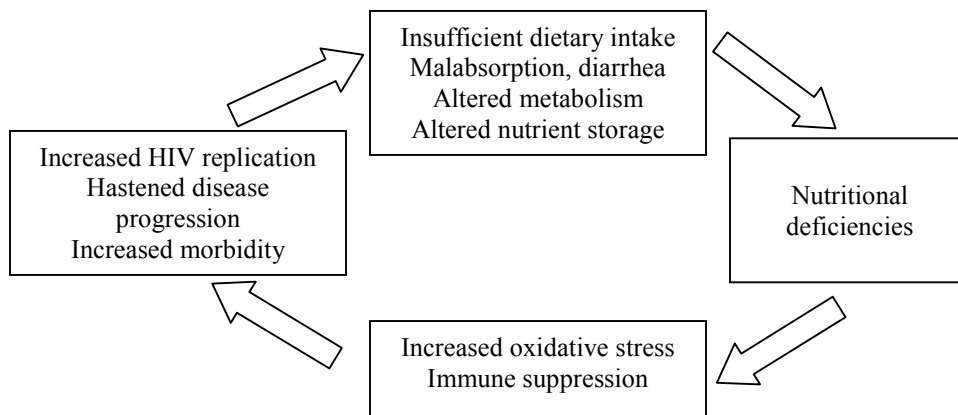
FIG. 3: HIV/AIDS EPIDEMICS: IMPACTS AND GENERIC RESPONSES



Microbiology: nutrition and disease

AIDS’ impacts begin at the physiological level. People living with HIV/AIDS have increased nutritional requirements: up to 50% greater for protein and 15% for energy (Piwoz and Preble 2000).⁵ AIDS strains already meager diets and pushes many into a vicious circle: failure to maintain nutritional status weakens immunity and increases susceptibility to opportunistic infections, which in turn undermine nutritional status and hasten the onset of full-blown AIDS (Semba and Tang 1999, see Figure 4).

Figure 4: The vicious cycle of malnutrition and HIV (source: Semba and Tang 1999)



⁵ The FANTA project in a recent draft statement (24 April 2003) has reaffirmed these figures, and in addition recommended that micronutrient intakes of HIV positive individuals be increased by 100% (www.fantaproject.org).

On the other hand, people able to meet these heightened demands can prolong the asymptomatic period of relative health and ultimately their lives, with benefits as well for those who depend on their labor and care, young children in particular.

Microenvironment

The impacts of AIDS at the microenvironmental level are broken down here into those relating to household labour supply, household resources and attitude and knowledge.

Household labour supply

The quantity of labour is further affected as members of afflicted households spend time looking after the sick and burying the dead and less time in agricultural pursuits. Other members of society are also affected, for the *'time spent at funerals, visiting the sick ...is in a way a subscription to society and thus enables the family to claim benefits in time of hardship...it is checked in the society's register'* (Bota et al 2001:7). Similar trends have been observed in Uganda, Tanzania and Zambia (Topouzis 1998). Traditionally, funerals ceremonies lasted 4-7 days, with more 'celebrations' after one month or 40 days or a year. However, the customs are changing to shorter ceremonies and less expensive ones.

A recent study in three districts in Central Malawi (Shah et al., 2001) found impacts of chronic illness (mostly AIDS-linked in the current context) that are similar to those described elsewhere in eastern and southern Africa. The loss of adult labour leads to a suite of changes in affected households' use of land and other resources (reviewed in Haddad and Gillespie 2001; De Waal and Tumushabe 2003). Agricultural activities are often delayed, with negative effects on production, and land is often left fallow. There are now several rigorous studies detailing the drops in net household production associated with AIDS-related adult mortality. In Kenya, Yamano and Jayne (2001) found a 68% decline in net household production; in Zimbabwe, Kwaramba (1997) found output declines of 37-61% for different crops, and in Swaziland, Muwanga 2002 found a reduction of 54% in maize production following the death of the household head.

Surviving household members may be under increased pressure to seek agricultural wage labour or may pursue non-agricultural income generating activities that yield a quick return. In either case, labour available for on-farm work is further reduced, and less available at critical moments in the season. Affected households are also frequently forced to reduce their reliance on labour or input-intensive crop or livestock enterprises, and to focus on activities that are of reduced scale and with fewer risks, but that also have lower output or provide less income.

Household resources

Loss of labor is not the only immediate effect of chronic illness and death. A host of expenses are incurred during the illness, at a time when income is also reduced, and the various customs surrounding funerals create further demands on a household's savings and assets. Less of these resources can then be devoted to agriculture. Declining public

health care systems often lead people to seek health services in parallel systems and especially from traditional healers, whose fees can be exorbitant. At the time of death, there are expectations to spend lavishly to appease the spirits so that death is cleansed from the village. In some parts of Malawi, a cow is slaughtered (Bota et al 2001). Disposable assets may be sold, often with a meager return. Increased indebtedness is also common (Shah et al., 2001: 51-2).

The sequence of responses to illness and death – reduced production, shift to less demanding and remunerative enterprises, sale of assets, indebtedness -- results for many afflicted households in deepening impoverishment. This has misleadingly been referred to as “coping” (see Box 1). Wealthy households and larger ones may escape some of the effects (Shah et al., 2001), however the protection is likely partial and may be only temporary. As already mentioned, important assets like land or livestock or household effects may be lost by the surviving spouse due to inheritance customs. In patrilocal systems of marriage, women cannot continue to use their spouse’s property if they want to remarry or move away from the marital home. Property grabbing is also rampant (Ngwira 2001). Critical agricultural resources may thus be lost by the affected household, further deepening impoverishment.

Box 1: The Illusion of Coping

“Coping is a way of escaping from the challenge of confronting how people’s capabilities are stunted, how their entitlements are blocked, and how their abilities to function as full human beings with choices and self-definitions are frustrated” (Barnett and Whiteside 2002)

Impacts of HIV/AIDS are often revealed through the responses made by households and communities, often referred to as “coping” or “coping strategies”. But has the dominant focus on coping become something of a cop-out? Coping may be a dangerous misnomer, an illusion, for the following reasons:

- Many responses are those of distressed households that are simply not coping (see Rugalema 2000 for a discussion of this). There may be little in the way of conscious strategy in some responses.
- It implies a reversible management strategy, though many changes (e.g. the sale of major assets, pulling children out of school to work) may not be reversible.
- It suggests that the adoption of such strategies is not too costly, though the reality is that many households are forced to make distress sales and they may become permanently impoverished or destitute. Some break up altogether.
- It implies homogeneity on the part of households or communities, when the reality is often that some individuals (e.g. women) from some households (e.g. the poorest) are hit much harder by HIV/AIDS impacts than others. Focusing on the mean, and not on the variance and different types of response, may obscure innovative responses, as discussed above. It is usually the positive or negative outliers that provide the most interesting lessons.
- The notion of coping usually fails to take account of time, of the long-term effects. For example, what is the long-term effect of a child’s foregone education, as s/he is pulled out of school to make up for lost adult labor? Recent studies (e.g. Yamano and Jayne 2001) have shown that economic recovery of the household following the death of an adult household head, may not happen for years, if at all.
- It implies a degree of self-sufficiency, which may be a fallacy. It deflects from central authorities’ responsibility to mobilize extra resources to fill local capacity gaps, and is thus diametrically opposed to a human rights approach wherein duty bearers, including governments, are held accountable for the respect, protection and facilitation of people’s rights to such essentials as food, health, care.

For these reasons we prefer the value-neutral term “responding” to that of “coping”.

Reduced production, consumption and income as a result of prolonged illness put household members other than the person living with HIV/AIDS, particularly children, at risk of malnutrition. Women may be left with few means to secure their own and their family's living other than to sell sex. This is one of the ways in which vulnerability to AIDS' effects and susceptibility to HIV infection are linked.

Through these various effects on household labor and resources, AIDS may increase vulnerability to episodes of acute food insecurity, as well to chronic food insecurity. Shocks that used to be weathered may become more significant in the context of AIDS. Southern Africa in 2002-3 is a case in point (Devereux 2002; IDC 2003) though it is hard to disentangle AIDS-related impacts from those of other shocks, they have become so intertwined and embedded.

The coincidence of generalized HIV epidemics with episodes of acute food insecurity has been hypothesized as triggering a 'new variant famine' (De Waal and Whiteside 2003), in which conventional famine-management capacities and strategies are being selectively nullified by AIDS. AIDS may both constrain options for responding to acute food insecurity, as well as increasing the prevalence and depth of chronic food insecurity. During 2003-2005, RENEWAL aims to foster a better understanding of the dynamic interactions between HIV/AIDS and other factors in food crises, thus highlighting options for more effective responses.

Attitudes and knowledge

AIDS also impacts the productive sectors by altering values. Many people who have been affected or afflicted by HIV/AIDS develop a short-term outlook. In terms of economic activities they often prefer to invest in petty trading, rather than agricultural enterprises whose returns take longer to accrue. From the perspective of a poor householder, even growing annual crops can be risky.

The children left behind when their parents die may not have acquired enough skills to perform some key agriculture and economic activities. This increases livelihood insecurity. Concurrently, children are drawn increasingly into adult responsibilities by parents or guardians and may be taken out of school (e.g. Arndt and Wobst 2002), with long-term negative impact on their ability to acquire literacy-based skills. Girls are particularly vulnerable.

Whole communities are affected when teachers too drop out of school due to HIV/AIDS. Teachers are frequently absent and their morale is reduced due to the time they must spend nursing their sick relatives and burying the dead (Kadzamira *et al* 2001:69). Absenteeism was reported to be higher among female than male teachers since they are the customary duty bearers in times of illness. This leads to poor education quality and also low enrolment rates as the families themselves fail to send children to school, especially girls.

Meso-environment: social networks

HIV/AIDS further threatens food security by eroding social security networks, an important social capital. The burdens of caring for the sick and for orphans are customarily spread within communities (Shah et al., 2001). As prevalence rises, these burdens may overwhelm the ability or willingness of other households to take in further dependents, further dividing their economic entitlements (Mtika, 2001). This is leading to an increase in the incidence of child-led households. Girls become increasingly vulnerable to abuse since some caretakers see them as a source of labour or as chattels to be exchanged in marriage (Ngwira et al 2000).

Very little is known about how AIDS is affecting access to and management of common property resources, such as forests, aquatic resources and grazing land. Concern has also been raised in Uganda (Kisamba Mugerwa and Nduhura 2002) and other countries over the potential spread of pests and diseases from the fields and banana groves that affected households are no longer able to adequately manage. Again, we are aware of no study that has seriously examined this effect.

Insecurity in rural areas, particularly as a result of theft of crops and livestock, is another major problem resulting in reduced production and unwillingness to invest further in vulnerable agricultural enterprises (Malawi Government 2001). The AIDS epidemic contributes to this problem, because adults who are absent from home for long periods to nurse sick relatives in hospital cannot properly care for and guard their own fields and animals (Ngwira 2001:7).

Macro-environment: institutional resources

AIDS affects the ability of agricultural and allied institutions to provide services by depleting their human resources. First, there is attrition of staff in agricultural administration, extension and research, due to death. Second, the quality of human resources declines due to morbidity and disorientation of those left behind. It is reported that in 1998, nearly 66% of staff that died in the Ministry of Agriculture in Malawi died from AIDS related illness (based on UNAIDS estimates of AIDS related mortality in urban areas, Bota et al 1999:9).

A second area where institutions are affected is the use of resources to take care of the sick, pay life insurance claims, death gratuities and the cost of burying the dead. The problem is compounded by cultural practices that require that the dead be buried in their grandparents' village. The expectation that employers will transport the dead is very high, to the extent that those who have failed to do so have had dead bodies dumped in their offices or homes.

Recognizing resilience

Resilience can be defined as the ability to recover relatively quickly from the effects of a major shock – here, the AIDS-linked illness and then death of an adult household member – or to avoid its worst consequences. It can be considered in relation to different aspects of well being, such as food security, nutrition, health, education or income. Resilience to AIDS impacts shares several features with resistance to HIV:

- As with resistance, resilience can best be assessed relative to other similarly situated social units, in this case those that have suffered a similar shock – the loss of an adult member following a long illness, or similar amounts of such loss. A relative definition makes sense: perfect stability can hardly be expected in the face of a shock of such magnitude.
- As with resistance, resilience assumes an active response. The household directly affected can innovate, using the resources available to it in different ways. Their response can also be supported by actions at other levels – the community, district, national or international. It can be appropriate therefore to assess resilience at these different levels.

While the concept of resilience has a slightly wider currency than that of resistance among researchers and development workers concerned with HIV/AIDS (e.g. du Guerney 2002), it has yet to be treated in a rigorous fashion. A major constraint is that the evidence of resilience is still seriously under-reported. AIDS has affected rural households and communities across a wide swath of Africa, yet we have little more than isolated accounts of innovations that go beyond the typical responses described above, which often entail a mining of remaining assets and resources. These typical responses are also the average ones that emerge from survey-based studies of how people are “coping” with the impacts of AIDS (Box 1). The methods used are ill adapted to bring out the exceptional and more hopeful responses that can inspire others similarly affected and provide leads to further research and development.

We can discern several patterns among the innovations at the household level that have thus far come to light:

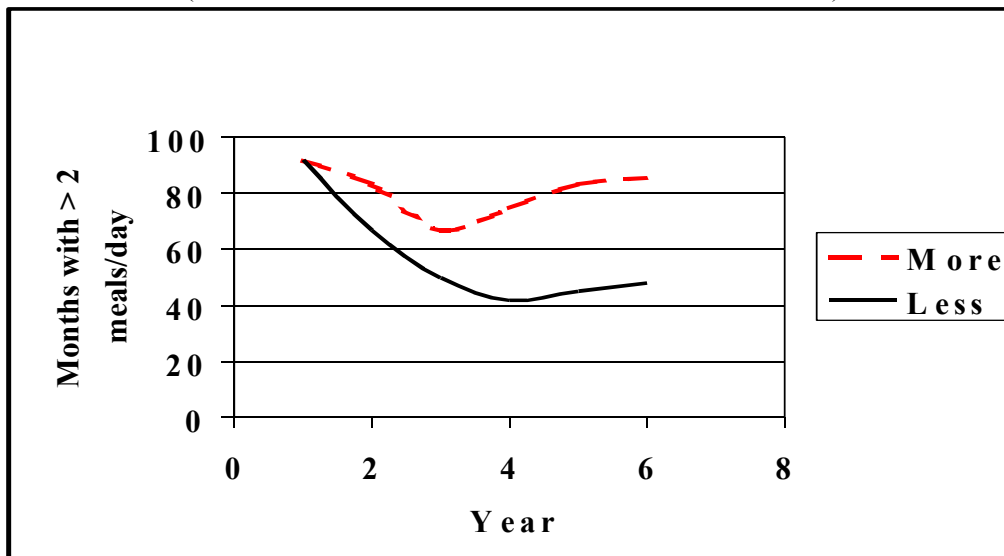
- 1) Making efficient use of remaining labor and other resources. Ncube (1999) describes the development of a light cotton planter by Zimbabwean farmers that can be drawn by a donkey. Oxen had previously been used but are difficult to handle by women or youths and many have been sold.
- 2) Focusing effort on parts of land holdings. Gabriel Rugalema (pers. comm.) recounts the efforts of a group of orphans in N. Tanzania to grow vegetables for an urban market on a well-watered and fertile plot that one of them had access to.
- 3) Adapting introduced technologies. Josef Decosas (pers. comm.) describes the case of a group of Mozambican widows whose husbands had previously collected honey from the forest – a pursuit the women felt unable to continue. Instead they sought out support to develop apiculture using locally constructed hives.
- 4) Reforming gender roles. The previous examples and evidence provided by Mutangadura *et al.* (1999) describe how surviving household members in several areas are cultivating crops or raising livestock in which they previously had little part.
- 5) Collective action. Neema (1999) cites testimony from a Ugandan widow of the importance of labor exchange, especially in land preparation.

There is still limited evidence of how such actions are being supported by communities. In S. Malawi, we have met with community groups that are building on traditions of orphan support by donating labor to crop production, providing food or cash to orphans

and those caring for them. We take up below opportunities for support to such responses by formal institutions.

Another poorly understood area is the contribution that local agricultural and livelihood systems can make to resilience. Differing levels of productivity among farming systems may affect households' capacity to withstand and recover from the shock associated with the death of an adult through AIDS. The range of agricultural technologies and enterprises, long existing or recently introduced, available to households in a system may also make it easier or harder for them to alter the nature and permutation of their livelihoods in response to the effects of HIV/AIDS and thus to find new ways to meet their requirements. For example, energy availability may be increased through switching from the cultivation of beer bananas to sweet bananas or plantains (Gillespie 1989); accessible and adapted low labor-demanding crops like cassava and sweet potato may facilitate people's response to AIDS (Barnett and Blaikie 1992), though as discussed later, such changes may have long-term nutritional costs given the low protein concentration of such crops. Proximity to markets and non-farm employment opportunities may provide additional possibilities for innovation. These ideas need to be tested.

Figure 5: Illustration of resilience to AIDS at the household level.
(Time is measured from the death of a male household head.)



As with resistance, it is important to consider how one would recognize resilience in the field. In Figure 5, the experience of different households or classes of households is compared in terms of a food security indicator. As suggested above, other aspects of well-being could be considered; the choice can probably best be made in consultation with people in the community. The top curve shows the two facets of resilience: lesser depth of drop-off and shorter time to return to a level accepted as normal⁶.

⁶ It is quite possible that some households that are not directly affected by AIDS may actually be benefiting from the effects on others. This could happen, for instance, if in-laws take over land or other assets from widows and orphans. If widespread, this could translate at the community and wider levels,

Figure 6: Illustration of resilience to AIDS at the community level.
 (The black symbol represents a relatively resilient community.)

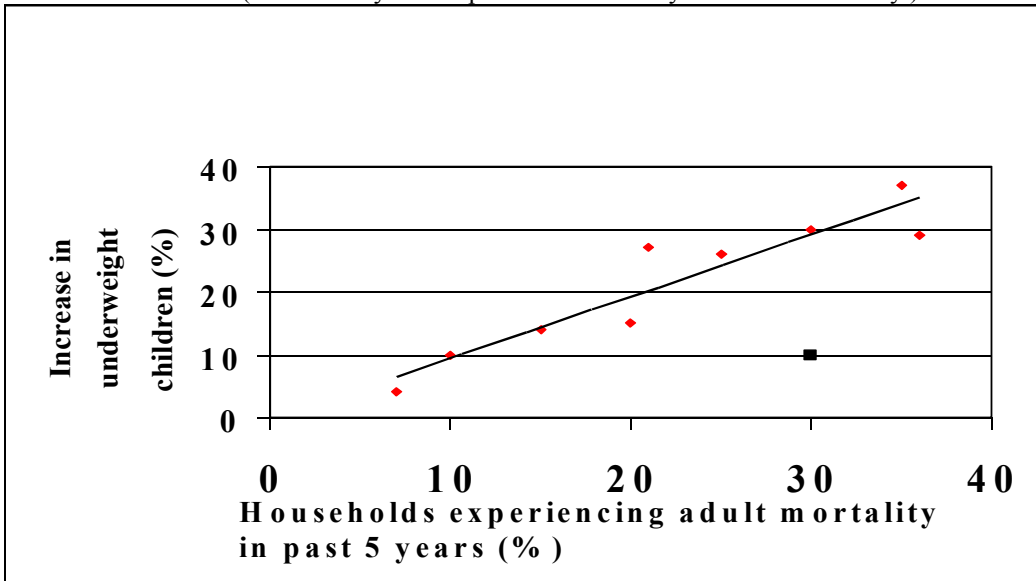
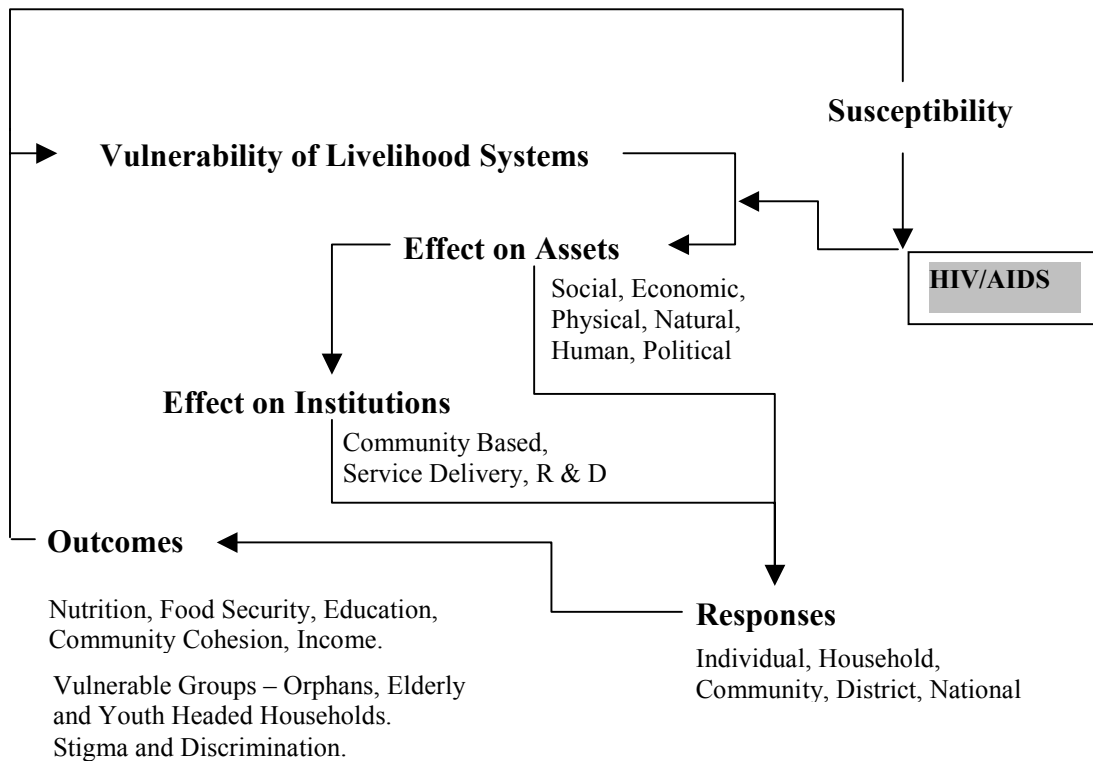


Figure 6 illustrates how one might identify resilience at the level of communities, with adult mortality here being a proxy for AIDS prevalence, and resilience being assessed in relation to child malnutrition. Again, the mere fact of being an outlier is not sufficient evidence of resilience. One would want to identify the specific responses, the innovations that enable some households or communities to fare better than others. These approaches are currently being refined in work in S. Malawi.

In trying to identify sources of resistance and resilience in a particular context, the Sustainable Livelihoods framework (see Figure 7) may also prove a helpful guide, complementing the generic system maps in Figures 1 and 3. The six capital classes – human, social, economic, physical, natural and political – that the framework highlights and on which resilience can draw may be situated at more than one spatial or social scale.

into a minimal impact of AIDS in aggregate economic terms (production or income) coincident with substantial impact in terms of health, nutrition or education.

Figure 7: Understanding HIV/AIDS in the Context of People's Livelihoods



3 RESPONDING TO HIV/AIDS: OPPORTUNITIES FOR INSTITUTIONS

In this section, we examine institutional opportunities for responding effectively to HIV/AIDS. First, we address each of the four elements of conventional response -- prevention, care, treatment and mitigation – from the perspectives suggested by the foregoing approaches to understanding HIV/AIDS. Second, we illustrate the interconnectedness of these four elements, before addressing the rationales for multi-sectoral mainstreaming.

Preventing HIV Infection

HIV prevention has generally been focused on behavior change (abstinence, faithfulness) and the promotion of condom use. Enhancing life skills, particularly among young adults, has also been a facet of some programs. Unfortunately, we appear to still be years away from an effective and affordable vaccine and from having the means to deliver it widely⁷. It should be pointed out that if and when those advances are achieved, we will still have

⁷ The International AIDS Vaccine Initiative (IAVI) hopes to advance the most promising of its vaccines to final-stage studies by 2007 (www.iavi.org).

to deal with the wave of HIV/AIDS impacts resulting from individuals who are seropositive today and those who become so in coming years.

The preceding section suggests broader opportunities for prevention in the area of food security and rural livelihoods. First, those designing and implementing policies and programs in the sector should ensure that these “Do no harm”. Several ways in which they may inadvertently increase susceptibility or undermine resistance were pointed out above. Second and more actively, policies and programs can aim to reduce susceptibility and/or to support resistance to HIV. Among the former would be initiatives to alter situations of HIV risk by, for example:

- Changing the opening and closing times of rural markets to make the trade in sex more difficult, as has been attempted by local government in northern Tanzania (D. Kasongi, ACORD, pers. comm.);
- Providing family accommodation and not only single-sex dormitories for workers on plantations and other rural industries;
- Implementing effective sanctions against those distributing food in famine relief or in camps for the internally displaced who abuse their positions to extort sex (Kisamba Mugerwa and Nduhura 2002).

Support for resistance to HIV can buttress local efforts, making it possible for people to act on what they know concerning infection and its consequences. This may involve expanding livelihood opportunities in and around agriculture, in production or value addition. An illustration of such support by institutions acting at different levels was provided in the last section.

The reader probably noted that the actions themselves were hardly novel: treadle pump irrigation, out-of-season vegetable production and farmer field schools are now practiced in many areas. What would distinguish support to HIV resistance then from any other adaptive research or advisory program that employed these elements? We suggest three aspects are important:

- 1) It would reach out to those most at risk and ensure that the support provided was relevant and made sense to them, while not excluding others. Often the most susceptible to HIV are young adults – young women in particular – groups that are often left out of conventional extension or even Farmer Field School programs (Loevinsohn et al. 2000). However, local assessment, drawing on local understanding, is essential in order to identify other particularly susceptible groups.
- 2) It would build on or integrate efforts to enhance the life skills and knowledge of HIV risks of these same people. The links between the food security or livelihood action and risk reduction should be clear and ideally the action would be one that they have prioritized.
- 3) It would be monitored and evaluated to ensure that the livelihood or food security action was viable and could be sustained and that it permitted those susceptible to escape the HIV risks. This information should be available to those involved in the initiative to enable them to make corrections. It is easy to write this, but the reality is that these two legs – agricultural sustainability and risk reduction – on which such actions will have to stand have been the concerns of different

institutions and sectors. RENEWAL is seeking to enhance the capacity to deal with both sides through the action research it is supporting.

Finally, there are issues that require research a step or two removed from pilot implementation. A number of gaps in understanding have been identified in the previous section that, were they clarified, would permit more effective actions to be mounted. These include clear evidence of the links, positive or negative, between specific agricultural sector policies and HIV risks, and clarification of the contribution to susceptibility and resistance of different agricultural and livelihood systems (see below).

Treating and Caring for People Living with HIV/AIDS

For persons living with HIV/AIDS (PLWHA), nutritional care and support is critically important in preventing or forestalling nutritional depletion. Relevant specific objectives might include to improve quantity and quality of diet, to build or replenish body stores of micronutrients, to prevent or stabilize weight loss, to preserve muscle mass, to prevent diarrhea and other digestive discomforts associated with fat malabsorption, to speed recuperation from HIV-related infections, and to prepare for and manage AIDS-related symptoms that affect food consumption and dietary intake. Nutritional support has the potential of significantly prolonging the life of individuals for their own benefit and those who are dependent on them for care e.g., young children (Page 2000). Such interventions are likely to have the greatest overall impact early in the course of disease by prolonging the period of relative health with asymptomatic infection (Piwoz and Preble 2000). Unfortunately, relatively few people know they are infected at this time.

As argued in Box 2, nutritional support needs to go beyond micronutrient supplementation, and even beyond food provision. Nutritional adequacy requires adequate food, health and care (UNICEF 1990). For PLWHA, this means that appropriate treatment of opportunistic infections, stress management, physical exercise, and emotional, psychological, and spiritual counseling and support, for example, are all relevant (Abdale and Kraak 1995), along with conventional approaches such as home-delivered, ready-to-eat foods for homebound AIDS patients who are unable to prepare their own meals. One excellent example comes from the AIDS Support Organization (TASO) of Uganda. In its 17 years experience of supporting PLWHA, TASO has learned of the need to catalyse and support holistic approaches towards 'living positively' that revolve around food, health and care provision in the context of increasingly mobilized communities. PLWHA are not patients, they are partners who often become engaged in community awareness-raising on HIV/AIDS (Mukasa Monico 2001).

As well as care, food and nutrition is relevant to treatment. We simply do not know enough about whether, how and to what degree treatment efficacy may be compromised by poor nutritional status. The simple fact that some medicines need to be taken "on a full stomach" may be a problem for many people. Antiretroviral (ARV) drugs are toxic and they may be particularly toxic to someone who is not well-nourished. There are particular effects on bone metabolism (Tebas et al 2000) that may be serious among populations where calcium deficiency is widespread, and there are serious concerns about the development of metabolic disorders in patients on long term ARV therapy (McDermott et

al 2001). Moreover, we still do not know enough about the impact of ARVs on milk composition in malnourished lactating women, and about how ARVs interact with specific micronutrient deficiencies. Not only do these questions remain unanswered, many are not even being asked in the debates on ARV access.

Box 2: Responding to HIV/AIDS: Lessons from Another History

HIV/AIDS epidemics and chronic malnutrition are similar in that they are both multi-causal as well as multi-impact. Interestingly, the strong linkages between malnutrition and infection were earlier referred to as Nutritionally Acquired Immunodeficiency Syndrome (Scrimshaw et al. 1968). AIDS itself during the 1980s was called “*Slim*”, reflecting the characteristic wasting syndrome.

Lessons may be learned from examining the historical evolution of approaches taken to combat malnutrition. In the 1970s around the time that “integrated rural development programs” were in the ascendant, the multi-sectoral nutrition planning paradigm was dominant. Though advances were made in recognizing the multiple causality of malnutrition, the prescription – of a single nutrition planning unit with a mandate to somehow orchestrate the sectors in top-down, highly planned, multi-sectoral action plans that required complex coordination – basically failed (Field 1985). There may be some similarities and lessons here with the response to AIDS being grounded in National AIDS Commissions (NACS) which have been established to spearhead the multi-sectoral response to AIDS in affected countries.

After the failure of multi-sectoral nutrition planning, the pendulum swung back in the 1980s to direct nutrition-specific interventions which, though they may have been community-based, were not community-driven and often not sustainable. After this next disillusionment, the era of micronutrients unfolded during the 1990s: vitamin A capsules, iodized salt and to a lesser extent iron supplements represented the essential nutritional arsenal, easily delivered with short-term measurable impacts. The broader and deeper problem of basic energy malnutrition – manifested in underweight, stunting and wasting in children – was largely ignored as being too complex.

When it comes to the role of nutrition in responding to HIV/AIDS, again the prevalent view has been overly reductionist – emphasizing the roles of micronutrients, particularly vitamin A, whilst underplaying the importance of the macronutrients (energy and protein) and the ultimate importance of a diverse diet, adequate in quality and quantity. While micronutrient supplementation may have an important role within the overall nutritional response to HIV/AIDS, *food* is a crucial requirement—not least because the disease significantly raises energy and protein requirements that cannot be met by pills alone.

Other lessons may be relevant. It often makes sense to seize multiple opportunities for combating complex problems in order to more effectively put the brakes on vicious cycles, and fuel virtuous ones. Malnutrition is an outcome of two immediate level causes which interact in a vicious cycle – inadequate dietary intake and ill-health. These immediate causes are themselves underpinned by inadequacies relating to food security, health, care and environment conditions. In terms both of cost and effectiveness, it is often better, if feasible, to initiate a multi-pronged attack on these causes. Some of the most effective nutrition advocates have been individuals who have challenged the bureaucratic inertia that derives from compartmentalized organizational structures and processes that offer few incentives for integration. Sustained success in nutrition requires the forging of partnerships at different levels and the inter-sectoral convergence of relevant programs that address the multiple causes and consequences of malnutrition (Gillespie et al 2003).

Mitigating AIDS

In rural areas, mitigation has often built on community initiatives to support orphans and others affected by AIDS. Food has been at the heart of these efforts. Rarely, however, have agricultural organizations been involved to help make them more effective and sustainable.

The opportunities for agricultural sector organizations to contribute to mitigation include but go well beyond such direct support and are broadly symmetrical to those for prevention. Again, the first concern should be to “Do no harm” through policies or programs that unwittingly increase vulnerability or undermine resilience. For example, laws on inheritance or local customs that fail to protect widows’ continued access to land may leave them more insecure. Policies aimed at settling nomadic pastoralists may inadvertently erode the extensive stock loans and labor exchange characteristic of several East African groups that likely support resilience to AIDS and to other shocks like drought (Sperling 1987). How policies and programs can be improved, taking into account the multiple concerns that often underlie them, is taken up in the following section.

More actively, policies and programs can aim to reduce vulnerability and to enhance resilience. Among the opportunities:

- 1) Food-for-work programs that reach the most vulnerable can also draw on people’s understanding and energy to remove long-standing sources of vulnerability (Kadiyala and Gillespie 2003), for example by building structures to capture rainfall;
- 2) Extension and advisory programs can ensure that the most vulnerable have access to potentially helpful technologies, such as mosaic-tolerant cassava varieties. There is reason to be concerned that widow-headed households may not be well served by conventional extension (Gilbert et al. 2002) and even by more recent group-based approaches (see further below).
- 3) Savings and credit programs that are within reach of widows and others affected by AIDS in terms of collateral requirements and repayment schedules may be of real help to them in reconstituting their livelihoods (Parker et al 2000);
- 4) Initiatives can also serve to bring to light and diffuse “hopeful” innovations by AIDS-affected and at-risk households and communities, which, it was suggested, are likely severely under-reported. RENEWAL is in the early stages of support to such an effort that draws on rural radio.

These and similar initiatives that RENEWAL partners and other groups are planning or implementing draw on existing programs meant to serve a wide range of rural clients, including households whose poverty is traceable to forces other than HIV/AIDS. As with prevention-oriented initiatives, a program that seeks to add mitigation of AIDS impacts to its objectives will need to:

- 1) Draw on local understanding to identify and reach out to those who are the most vulnerable. What it offers should be relevant and helpful to them;
- 2) Build on existing local efforts, individual and collective, to mitigate AIDS impacts (this is one way in which the risks of inadvertently exposing those affected or living with HIV/AIDS to stigma and discrimination can be reduced) and
- 3) Monitor and evaluate progress. The food security or livelihood action should be economically viable and sustainable and contribute to resilience, enabling people to recover quickly in terms of the aspects of well-being they most value.

Again, as with prevention, care and treatment, there are critical gaps in our understanding that constrain more effective action. These are opportunities for research upstream from the operational. Several were suggested in the preceding section. Stakeholders in Malawi and Uganda prioritized a number of these research themes; the action plans they developed can be found at www.isnar.org/renewal.

The above suggests that there are strong similarities between how prevention, care, treatment and mitigation can be supported by agricultural sector organizations. These similarities derive from the systematic links between the causes and consequences of HIV/AIDS that we pointed to in the preceding section and that are exemplified by the way in which Figures 1 and 3 can be joined. The differences are equally important, however. Crucially, the people most concerned are often not the same. In many cases, poor, young women and slightly older young men are among the most susceptible to HIV. Orphans and widows are often among the most vulnerable to AIDS. They may well be endowed very differently: for example, young adults underemployed but with little access to land; widows with land they cannot till (and often at risk of losing) but with very little time to spare. Those in need of care and treatment are in a particular and precarious situation, but one not without hope as many who are “living positively” are showing.

Synergies among Prevention, Care, Treatment and Mitigation

The different aspects of the response to HIV/AIDS – prevention, care, treatment and mitigation -- should not be compartmentalized into hermetically sealed programs. Together they represent a continuum or an inter-linked web of mutually reinforcing responses. Each one is necessary, but insufficient in itself, in the struggle with HIV/AIDS. Through internalizing the implications of the two generic maps – of determinants (Fig 1) and impacts (Fig 3) – it will become easier, at each decision point, to identify the most appropriate set of responses. We illustrate the inter-connectedness of responses below:

- Treatment can be preventive -- if the viral load of individuals living with HIV/AIDS can be reduced through treatment, then they will be less likely to transmit the virus in an unprotected sexual encounter, even without any change in their behavior. (Conversely, and ironically, the life-prolonging effect of ARVs increases the time through which an HIV-positive person may expose others to the virus.)
- Care is also preventive. Programs aimed at improving the physical, economic, social and spiritual well-being of people infected or affected by HIV may reduce transmission risk. For example, STD treatment will reduce risk of HIV transmission. Orphans who are cared for by the extended family or community are less likely to engage in risky sexual practices, than if they were left to fend for themselves on the street.

- Care mitigates impacts, while mitigation increases caring capacity. Care and support clearly mitigate individual-level impacts, while other forms of mitigation may improve the capacity to care within households and communities e.g. by freeing up time through labor-saving technologies or practices.
- Mitigation is preventive for those not yet infected in AIDS-afflicted households, and for future generations. To the extent that food insecurity or malnutrition increases HIV susceptibility, mitigating efforts that succeed in combating food insecurity or malnutrition (whether AIDS-induced or not) may reduce HIV exposure. “HIV-sensitive” food and nutrition-relevant programs (that derive from use of an HIV/AIDS lens, described below) may do so even more effectively. If the surviving household members are able to do better than merely survive, they can avoid the most extreme poverty and the necessity to sell sex. If mitigation efforts can help the survivors avoid this downward spiral, then the community as a whole gains a preventive advantage since prevalence is contained, and so the wider risks of exposure.
- At the community level, there may be “positive sum” solutions linking mitigation and prevention. For example, AIDS widows may be left with land holdings that they can no longer cultivate and possibly livestock and other resources that they can no longer manage. They are often at risk of losing them to the husband’s family where the widow’s inheritance rights are insecure or, if they sell in distress, the price they obtain will be minimal. At the same time, there may be young adults in the community who have no land or livestock of their own; with poor livelihood prospects they may be at heightened risk of HIV-infection. Social innovations that secure the widows’ entitlements, allowing them to exchange a fair share of the production for the young adults’ labor would be of benefit to both.

These opportunities can be grasped when they are recognized. This requires understanding of the underlying links between HIV/AIDS on one side and food security, nutrition and livelihoods on the other. It also requires a space or a forum where the different interests can be represented and possibilities discussed. Decosas (2001) and others refer to the capacity to recognize and act on the links among prevention and mitigation as “community HIV/AIDS competence”. Individuals and communities, however, can only do so much on their own. They need the support of HIV/AIDS competent institutions, sub-national, national and international.

Why Mainstream?

This internalization, subsequently reflected in AIDS-aware decisionmaking, is the essence of mainstreaming -- essentially a process of harnessing and developing the capacity of an organization or sector to respond at the broadest level.

Mainstreaming is different to integration, which may just involve adding or linking an AIDS-specific component or intervention to another development program – or adding an ‘AIDS chapter’ to a development plan. Unlike integration, mainstreaming influences an

institution's 'core business'. It may change both *what* is done, and *how* it is done. It is an iterative process, with HIV/AIDS considerations being fully factored into programming cycles of problem assessment, causal and resource analysis, followed by action.

Mainstreaming is required for several reasons. We have already spoken of the threat AIDS poses to the achievement of several Millennium Development Goals beyond the HIV-specific goal. Mainstreaming is also necessary to better align the breadth and depth of the response with the breadth and depth of the epidemics' impacts. Scaling up is not just a matter of increasing coverage of HIV programs; it can be functional, organizational or political as well as quantitative (Gillespie 2002). Mainstreaming HIV considerations into developmental policy is one means of increasing the scale of the response. Ultimately the reason why HIV/AIDS should be mainstreamed across and within sectors is that HIV epidemics themselves are, in a sense, multi-sectoral, both in terms of etiology and impact.

Five simple principles have been put forward for mainstreaming: identify an entry point; mainstream within existing institutional structures; ensure adequate advocacy, sensitization and capacity development; differentiate internal and external domains; and develop strategic partnerships based on comparative advantage, cost effectiveness and collaboration (UNAIDS/GTZ 2002). To this should be added extra resources and secure financing – to counteract the perception that “mainstreaming” is a way of avoiding expenditure, while maintaining an appearance of combating AIDS (Egero 2003)⁸.

4 DEVELOPING AN HIV/AIDS LENS

To facilitate mainstreaming, we need appropriate, adaptable methods and tools to first, help understand the dynamic interactions of HIV infection and AIDS impacts on different sectoral concerns (e.g. food insecurity), and, second to identify appropriate policy and program modifications in the face of HIV/AIDS realities. This is where the « HIV/AIDS lens » is useful.

The HIV/AIDS lens is a conceptual tool intended to help decision makers in agriculture and allied fields, from farmers to policymakers, to re-view situations (e.g. heightened food insecurity) and actions (e.g. an extension policy, a village grain bank program) in the light of HIV/AIDS. The lens is designed to support reflection on how the situation may be increasing or reducing the risks people face, either of contracting HIV or of suffering severe consequences flowing from AIDS-linked illness and death, and how the action, actual or planned, might contribute to these effects.

Using a lens essentially precludes the common reflex of “new problem, new program”. Such compartmentalization constrains the development of effective solutions to problems precipitated or exacerbated by HIV/AIDS. So while not everything need change, and we

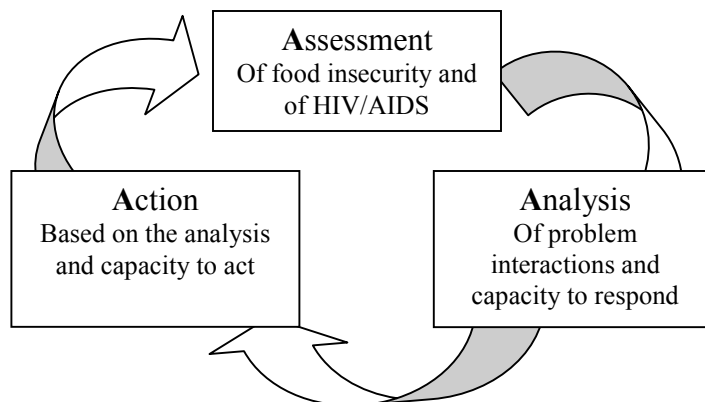
⁸ “HIV/AIDS has no budget line; no specific funds are allocated to it; and the sector's activities will not be restructured to accommodate HIV/AIDS but, rather, HIV/AIDS programmes will be adjusted to fit into the strait-jacket of existing sector functions” (quote from UNFPA mission report on realities of “mainstreaming” UNFPA 2001)

shouldn't re-invent wheels, a hard look is needed to effectively respond to new threats, and to seize new opportunities. Aided by the generic maps in Figures 1 and 3, and the concepts described earlier, and over time (i.e. through several iterations of the cycle in Figure 8 below), use of the lens becomes second nature. A process for using the lens is described below, but first, we need to look more closely at the characteristics of the lens and its potential applications.

Characteristics of the Lens

- **Bifocal.** The lens is bifocal in that it may be applied to look at HIV-related susceptibility and/or AIDS-related vulnerability. It may reveal the way in which a particular program affects the *interaction* between HIV/AIDS and the initial problem being targeted. For example, if the program aims to reduce malnutrition, the lens will shed light firstly on whether, and how, the program is still likely to effectively reduce malnutrition in the context of expected HIV/AIDS interactions. And second, how it might increase or decrease HIV/AIDS-related susceptibility and vulnerability.
- **For internal and external use.** The lens may be applied internally (within institutions) and externally (within policy and programming). Internally, the lens aims at preserving and augmenting capacity, focusing on workplace policies and responses to HIV/AIDS. This includes issues of insurance, benefits, access to information and treatment. Externally it will clarify the interactions between HIV/AIDS and sectoral policies and programs, as described above.

Figure 8: The Triple A cycle applied to HIV/AIDS and food insecurity



Source: Adapted from UNICEF 1990.

- **For analyzing problems as well as generating solutions.** The lens should not only relate to action, it should also crucially be applied to initial problem assessments by all stakeholders. The UNICEF-pioneered Triple A cycle (see Figure 8) is a useful construct for highlighting the *process* aspect of lens use. It emphasizes that situations need to be *re-assessed* once actions have been

implemented. To permit this, HIV/AIDS considerations need to be built into all relevant monitoring and evaluations systems.

- **Engendered.** It reflects the different HIV susceptibility of men, women and other social groups. Women are biologically, socio-economically, and culturally more at risk of HIV infection than men, and they are more vulnerable to AIDS impacts (Rao Gupta 2000). The lens must take into consideration how a particular action will affect people vulnerable to threats other than AIDS.
- **Context-specific.** There are many different types of lens user at different social and spatial scales. The lens can be applied to grassroots situations (e.g. by farmers and community workers), to programs (e.g. agricultural extension workers), and it can be applied at the level of policy planning (again, see Figs 1 and 3). The lens will look different for different users in different situations. The type of lens a policymaker will use to re-view agricultural policy will be different to an implicit lens a family member will use when deciding how to respond to reduced family labor power. But it will be important that the policy lens will have factored in the possible livelihood effects, choices and decision options of an AIDS-affected agriculture-dependent household. The policy maker will need to see what AIDS is doing to agriculture in order to better understand what policy levers are best engaged to strengthen resistance and resilience.
- **Evolving over time.** The lens should not be conceived as a prescription or a product – or at least not a static one. It is dynamic, evolving, and will be refined as knowledge of what is happening is updated. Using and refining the lens is an iterative learning and doing process (see Figure 8).
- **Revealing “positive-sum” solutions and opportunities.** The use of the lens, particularly in a social context, can help to identify new possibilities that may not otherwise have been obvious (see the earlier example of village youth being put to work on the land of AIDS widows to their mutual advantage)
- **Revealing trade-offs and dilemmas.** The lens may reveal new or hidden costs and benefits, and thus some new trade-offs, which need to be resolved. For example:
 - Applied to infant feeding, it will show that while exclusive breastfeeding for the first six months may bring certain benefits to the child, it may also increase the risk of HIV transmission from an HIV-positive mother. Yet, switching to formula feeding will cut the HIV risk but potentially significantly increase the risk of other health hazards e.g. contaminated feeds. We are still learning about how to help mothers make the best choice in such situations. Conditions, and hence risk profiles, differ significantly within and between countries⁹.

⁹ The latest guidelines (WHO 2001) state: “When replacement feeding is acceptable, feasible, affordable, sustainable and safe avoidance of all breastfeeding by HIV-infected mothers is recommended. Otherwise

- Poverty may force families to split up temporarily or permanently as an adult goes in search of work. The benefits may include increased household income but – if we apply the lens – we may highlight some major costs if this dislocation leads to more frequent sexual interactions. There may be a significantly greater risk of the migrating individual (as well as his/her partner who remains) being infected with HIV.
- Applied to agriculture, in the short-term, cassava may be a good choice to grow as it does not require a lot of labor, but in the long-term, unless there is scope for diversifying the diet elsewhere, it may increase the chances of long-term nutritional problems given its low protein concentration (at a time when HIV/AIDS is raising protein requirements);
- A diversified diet (e.g. achieved through developing kitchen gardens to grow micronutrient-rich fruits and vegetables) requires more time, which may also be used in wage-earning or caring for the sick;
- Liberalization of food markets may increase income, but may also increase risk if there is more travel and more time spent in overnight stays at spatially scattered markets;
- Better transport infrastructure facilitates the marketing of food surpluses, but may also increase travel-related HIV susceptibility.

One recurrent issue will be how to weigh up the costs and benefits of short-term versus long-term responses. How feasible are sustainable responses? Where capacities of households and communities are being eroded, often irreversibly, in ways that will reverberate across generations, how realistic is it to expect responses undertaken now to not undermine capacity to respond in the future (see Box 1 on coping)? Sustainability in this context may be something to strive for, but not to be straitjacketed by.

- **For re-viewing HIV-specific programming.** Finally, in addition to applying an HIV lens to development policy, there's a need to promote the use of a developmental lens to the design of specific HIV policy and programs, whether these be related to prevention, care or treatment. Any new program aimed at risk-reducing behavioral change, for example, needs to fully take account of what, in addition to information, influences or constrains choices and behaviors (see Figure 1). Better communications between sectors will permit the findings of such basic analyses to be channeled to those who can act on them.

Using the Lens: an Illustration at the Level of Policy

RENEWAL is developing processes through which decision makers at different levels and in different contexts can learn to use the lens. These processes are linked and currently include (i) the formation of sector-wide national networks that advance

exclusive breastfeeding is recommended during the first months of life. To minimize HIV transmission risk, breastfeeding should be discontinued as soon as feasible, taking into account local circumstances, the individual women's situation and the risks of replacement feeding (including infections other than HIV and malnutrition)"

practical understanding through action research and forums for exchange and policy dialogue; (ii) the review of national agricultural policies and programs and (iii) the development of community-led action on food security and livelihoods to advance prevention, mitigation, care and/or treatment. Experiences with the first and last will be described in forthcoming publications. Here we outline a three-stage process of applying the lens to national agricultural policies and programs.

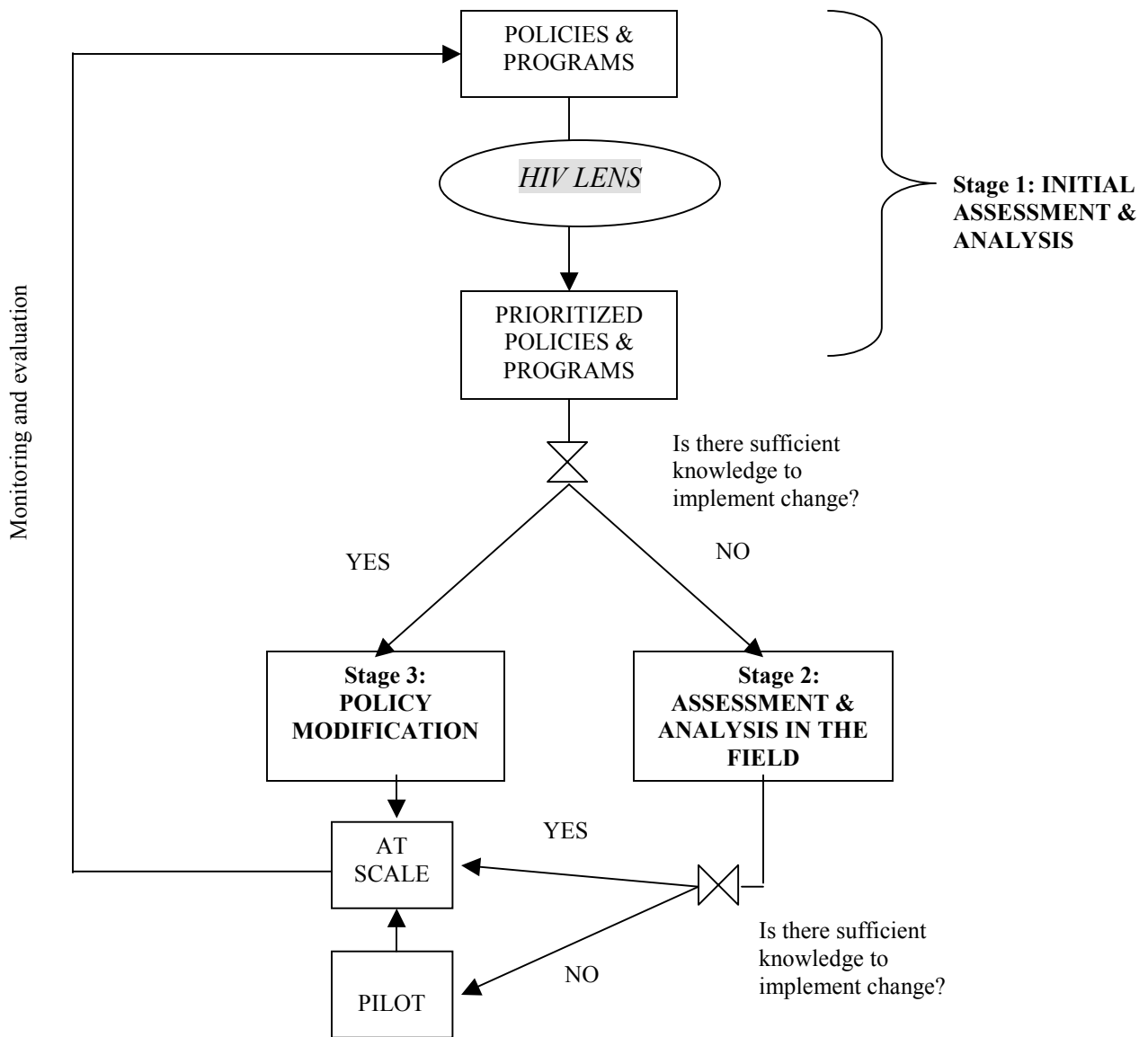
Stage 1 involves a review of agricultural policies and programs in terms of their potential contribution – positive or negative – to HIV/AIDS prevention and mitigation. This may be carried out in workshops, primarily by the researchers, program managers or policy makers responsible for them, with outside facilitation and the involvement of key stakeholders. The lens is first introduced, i.e. the concepts of susceptibility, resistance, vulnerability and resilience, the generic maps and other aids to understanding, and the current state of knowledge on agriculture-HIV/AIDS links and how interventions can modify them. Attention is then directed to particular policies and programs in turn. Those responsible introduce them, their purpose, how they are operated and the extent, if any, to which HIV/AIDS has already been taken into account in design or implementation. Looking through the lens, participants then assess potentially negative and positive effects, and ask themselves the following type of questions:

- How might this policy or program be increasing people’s susceptibility to HIV?
- How might this policy or program be increasing people’s vulnerability to AIDS’ consequences?
- How likely, serious and widespread are these effects expected to be?
- How might this policy or program be enhancing people’s resistance to HIV?
- How might this policy or program be enhancing people’s resilience to AIDS’ consequences?
- How likely, beneficial and widespread are these effects expected to be?

The facilitator ensures that issues are adequately discussed and that cross-cutting issues get their due, asking, for example, “How are women in particular affected?” and “How would this affect people who are vulnerable to other threats?”

The output of this review will be a list of policies and programs prioritized in terms of their potential positive or negative contribution to HIV/AIDS prevention and mitigation. In some cases, those responsible may feel compelled to alter the policy or program on the basis of the review alone, particularly where serious harm is thought likely and a remedy is obvious. However, given the imperfect nature of the lens currently, they are more likely to conclude that evidence from the field is essential before taking action.

Figure 9: Illustration of Process of Using an HIV/AIDS Lens to Improve Policy



Stage 2 will seek that evidence for those policies and programs thought to be having the greatest positive or negative effects, the number depending on the resources available. The methods used will be determined by the nature of the threat or opportunity, but in all cases will include seeking the views of the social groups concerned. Researchers, in collaboration with those responsible for the program or policy, will gather quantitative and qualitative evidence on whether it is helping or hindering affected households in their struggles to overcome the consequences of AIDS or avoid falling into situations of high HIV risk. For example, with respect to mosaic-tolerant cassava varieties, research would assess whether current diffusion mechanisms are succeeding in putting them into the hands of AIDS-affected household heads, whether the households are able to put them to use, whether they in fact gain the expected production advantage and whether the benefits reach the most vulnerable e.g. in terms of enhanced nutrition.

Stage 3 will involve the modification of programs and policies, drawing on the results of stage 2. There is a spectrum of possible modification – ranging from changing nothing to

changing everything (i.e. stopping the existing program or initiating a new one). Different aspects – the what, how, who, where -- may need to change.

In some cases, the changes needed may be clear and uncontroversial and can confidently be implemented at full scale. Here, the research required would be limited to monitoring and evaluating the revised program or policy. In other cases however, the way forward may be less certain, with no evaluated experience to draw on. Policies causing concern will have often have been designed to balance different stakeholders' interests; how a new balance is to be achieved with HIV/AIDS factored in may not be obvious. In these situations, trials at pilot scale may help provide guidance to policy or program reform.

Take again the example of mosaic-tolerant cassava. The stage 2 analysis may have shown that affected households are having trouble accessing the improved varieties through group-based extension approaches, possibly because the widows, orphans and grandmothers simply don't have time to attend the meetings where they are distributed, or because they find themselves excluded. Other approaches would then have to be tested to reach them and other households similarly situated, but whose poverty is not due to AIDS. That may entail developing partnerships with community-based organizations that are already working with these groups.

Such trials would use the results from stage 2 as a baseline against which to evaluate the modified policy or program. If they are to be an effective guide to policy and program reform, it is important that key stakeholders, including local government and civil society actors, be familiar with the trials and have a chance to influence their design. They must also have access to their results in a timely and usable form.

The action research of stages 2 and 3 need not await the conclusion of the stage 1 review. Where there is good reason to believe that particular policies or programs may be having beneficial or detrimental effects, delaying trials to clarify these and to seek ways to reduce the negative and enhance the positive effects is difficult to justify.

Conclusions

In a situation where HIV/AIDS is seriously eroding, and often tearing apart, the social and economic fabric of countries, sewing on patches is just not enough. The entire weave of the fabric needs to be strengthened. This will require responses that are not only multi-sectoral but multi-level – from the rural farmer adopting and adapting livelihoods to reduce risk, to national policy makers embarking on a comprehensive review of the AIDS-relevance of existing development policy.

The linked concepts of resistance and resilience need to become grounded in processes of understanding and responding at all levels. Resistance here refers to the ability to avoid HIV infection, while resilience refers to the ability to withstand the different impacts of AIDS. Both imply active responses. Ultimately, a better understanding of what determines resistance and resilience at different levels and for different people, will point to clear options for effectively responding. An actor-oriented, innovation perspective is needed to counteract the widespread hopelessness deriving from 'doom and gloom'

broad-brush prophecies of livelihood collapse. Much positive experience does exist, and this needs to be documented, disseminated and learnt from.

One major set of responses is required from the agriculture sector, as the need to secure and provision food for populations affected by HIV/AIDS is rapidly increasing as the impact waves hit. Food is often the first priority of people affected by the pandemic. We are also beginning to learn more about the crucial role of nutritional status – both in terms of susceptibility to HIV infection and transmission and in terms of the quality and quantity of life of HIV-positive individuals.

A sea change is required -- in attitudes and consciousness of what HIV/AIDS is doing at different levels and the pathways through which it moves through societies. Such a new awareness may be facilitated by the use of an HIV/AIDS lens – essentially a tool for re-viewing situations and development actions from the perspective of our evolving knowledge of AIDS interactions. The lens will facilitate the development of more HIV-relevant policies and programs of more sectors – and ultimately in larger scale, sustained progress in responding to AIDS. While the specifics will become clear through use of the lens, external support will likely be most effective in the long run where it is directed to preserving and developing institutional capacities to strengthen resistance and resilience.

References

Abdale, F. and V. Kraak. 1995. Community-based nutrition support for people living with HIV and AIDS: A technical assistance manual. New York: God's Love We Deliver, Inc.

Allen, LH and Gillespie SR (2001) What Works? A Review of the Efficacy and Effectiveness of Nutrition Interventions. United Nations Sub-Committee on Nutrition and Asian Development Bank, ADB, Manila (www.adb.org), September 2001.

Arndt, C. and Wobst, P. (2002) HIV/AIDS and Labor Markets in Tanzania. IFPRI TMD Discussion Paper No. 102, IFPRI, Washington DC.

Barnett, T. and Blaikie, P. 1992 AIDS in Africa: Its Present and Future Impact. (London: John Wiley; New York: Guilford Press)

Barnett, T. and Whiteside, A. 2002 AIDS in the 21st Century: Disease and Globalization. Palgrave Macmillan, New York.

Barnett, T., A. Whiteside, and J. Decosas. 2000. The Jaipur paradigm: a conceptual framework for understanding social susceptibility and vulnerability to HIV. *Journal of the South African Medical Association* 90 (1): 1098-1001.

Bentwich, Z., Kalinkovicj, A. and Weisman, Z. 1995 Immune Activation is a Dominant Factor in the Pathogenesis of African AIDS. *Immunology Today* Vol. 16, p187-91.

Bota, S., G. Malindi, and M. Nyekanyeka, 1999. A Report on preliminary study for factoring HIV/AIDS in the Agriculture Sector (Unpublished),UNAIDS,Lilongwe,Malawi.

Bota, S., M Mphopo, and G. Malindi 2001, Impact of HIV/AIDS in Agricultural Extension Orgnaization and Field Operations in Selected Countries of sub Saharan Africa, with and Appropriate Institutional Response (Draft Report), UNDP/FAO, Lilongwe, Malawi.

Decosas, J., 2001. The social ecology of AIDS in Africa, draft.

Devereux, S., 2002. The Malawi famine of 2002. *IDS Bulletin* 33(4): 70-78.

De Waal, A. and Tumushabe, J. (2003) HIV/AIDS and Food Security in Africa. A Report for DFID, draft.

De Waal, A. and Whiteside A. 2003. HIV/AIDS, food crisis and governance: 'New Variant famine' in southern Africa. Technical background paper, draft. AGOA Forum

Domingo, E. 1997 Rapid Evolution of Viral Genomes. *Journal of Nutrition*, Vol. 127, p958S-61S.

Du Guerney, J., 2002. Meeting the HIV/AIDS challenge to food security: the role of labor saving technologies in farm households. UNDP South East Asia HIV and Development Program.

Egero, B. 2003 To Fight AIDS Successfully Requires Unconventional Approaches. In: *One Step Further: Responses to HIV/AIDS*, SIDA Studies No. 7, SIDA, Sweden.

Farmer, P. 1999. *Infections and Inequalities: The Modern Plagues*. Univ. California Press, 367 pp.

Fawzi W, Msamanga G, Spiegelman D, Renjifo B, Bang H, Kapiga S, Coley J, Hertzmark E, Essex M, Hunter D. Transmission of HIV-1 through breastfeeding among women in Dar es Salaam, Tanzania. *J Acquir Immune Defic Syndr*. 2002; 31:331-338.

- Field, J.O. 1985 Implementing Nutrition Programs: Lessons from an Unheeded Literature. *Ann. Rev. Nutr.* 5, 143-72.
- Garnett, G.P. and R.M. Anderson, 1996. Sexually transmitted diseases and sexual behaviour: insights from mathematical models. *Journal of Infectious Diseases* 174(Suppl. 2): S150-61.
- Gilbert, R. A., W. D. Sakala and T. D. Benson, 2002. Gender analysis of a nationwide cropping systems in Malawi." *African Studies Quarterly* 6, no.1: [online] URL: <http://web.africa.ufl.edu/asq/v6/v6i1a9.htm>
- Gillespie, S.R., Mclachlan, M. and Shrimpton, R. (2003) *Accelerating Nutrition Improvement: Time to Act*, World Bank, Washington DC.
- Gillespie, S. (2002) *Scaling Up Community-Driven Development*, overview. IFPRI, Washington DC.
- Gillespie, S.R. (1989) Potential Impact of AIDS on Farming Systems: A Case Study from Rwanda. *Land Use Policy* Vol. 6 (4), p301-312.
- Haddad, L. and Gillespie, SR (2001) Effective Food and Nutrition Policy Responses to HIV/AIDS: what we know and what we need to know. *Journal of International Development* 13, 487-511.
- IDC, 2003. *The Humanitarian Crisis in Southern Africa. Third Report of Session 2002-2003*, House of Commons, International Development Committee, UK.
- Kadiyala, S. and Gillespie, S.R. (2003) *Rethinking Food Aid to Fight AIDS*. IFPRI FCN Discussion Paper, forthcoming
- Kadzamira E. et al, 2001. *The Impact of HIV/AIDS on the Education Sector: Formulating a Comprehensive Strategic Response*, Centre for Educational research and Training, Chancellor College, Zomba, Malawi.
- Kisamba Mugerwa, W. and D. Nduhura, 2002. *Background Paper on HIV/AIDS and Agriculture in Uganda*. Forthcoming RENEWAL Working Paper.
- Kwaramba, P. 1997 *The Socio-Economic Impact of AIDS on Commercial Agricultural Production Systems in Zimbabwe*, Zimbabwe Farmer's Union and Friedrich Ebert Stiftung, Harare, December 1997.
- Leroy V, Karon JM, Alioum A, Ekpini ER, Meda N, Greenberg AE, Msellati P, Hudgens M, Dabis F, Wiktor SZ. Twenty-four month efficacy of a maternal short-course zidovudine regimen to prevent mother-to-child transmission of HIV-1 in West Africa.; West Africa PMTCT Study Group *AIDS*. 2002; 16:631-641.
- Loevinsohn, M., Meijerink, G. and Salasya, B., 2000. Developing integrated pest management with Kenyan farmers: evaluation of a pilot project. In: Lilja, N., Ashby, J.A., Sperling, L. (eds.) *Proceedings of the Seminar on Assessing the Impact of Participatory Research and Gender Analysis*, September 1998, Quito, Ecuador. CGIAR Program on Participatory Research and Gender Analysis, Cali, Colombia. pp. 227-241.
- Loevinsohn, M.E., J. A. Berdegúe and I.Guijt, 2002. Deepening the basis of rural resource management: learning processes and decision support. *Agricultural Systems* 73(1): 3-22. www.isnar.cgiar.org/publications/ag_systems73.htm
- Loevinsohn, M.E. (ed.) 2002. *Deepening the Basis of Rural Resource Management*. *Agricultural Systems* 73(1) Special Issue http://www.isnar.cgiar.org/publications/ag_systems73.htm
- Low-Ber, D., Stoneburner, R., Whiteside, A. and Barnett, A., 2000. Knowledge diffusion and personalizing risk: key indicators of behavior change in Uganda compared to southern Africa. Abstract ThPeD5787. XII International AIDS Conference, Durban, SA, 7-14 July.

Malawi Government, 2001a. Sexual and Reproductive Health Behaviours in Malawi: A literature review to support the Situational Analysis for the National Behaviour Change Interventions Strategy on HIV/AIDS and Sexual and Reproductive Health. National AIDS Commission and Sexual and Reproductive Health Unit, Ministry of Health and Population, Lilongwe.

Malawi Government 2001b Draft Malawi Poverty Reduction Strategy Paper, Ministry of Finance and Economic Planning, Lilongwe, Malawi.

Mataya 2000, cited in Ngwira et al 2001.

Mayer, R.H. 1999. Designing instruction for constructivist learning. In: Reigeluth, C.M. (ed.) Instructional Design Theories and Models, pp. 143-159. Lawrence Erlbaum Assoc., Mahwah, NJ

McDermott, A.Y., Shevitz, A., Knox, T., Roubenoff, R., Kehayias, J. and Gorbach, S. (2001) Effect of Highly Active Anti-Retroviral Therapy on Fat, Lean, and Bone Mass in HIV-seropositive Men and Women. *Am J. Clin. Nutr.* 74, 679-86.

McKeown, T. 1988 *The Origins of Human Disease*. Blackwell, Oxford.

Mtika, 2001, Social and cultural relations in economic action: the embeddedness of food security in rural Malawi amidst the AIDS epidemic

Mukasa Monico, S. 2001 Achievements of The AIDS Support Organization (TASO) in Uganda. In: ACC/SCN 2001 Nutrition and HIV/AIDS, Nutrition Policy Paper No. 20, ACC/SCN, Geneva (www.unsystem.org/scn)

Mutangadura, G., D. Mukurazita and H. Jackson, 1999. A review of household and community responses to the HIV/AIDS epidemic in the rural areas of sub-Saharan Africa. UNAIDS report 99.39E, Geneva.

Muwanga, F.T. 2002 Impact of HIV/AIDS on Agriculture and the Private Sector in Swaziland The Demographic, Social and Economic Impact on Subsistence Agriculture, Commercial Agriculture, Ministry of Agriculture and Co-operatives and Business. (www.gdnet.org/fulltext/muwanga2.pdf)

Ncube, N.M. 1999. The impact of HIV/AIDS on smallholder agricultural production in Gweru, Zimbabwe, and coping strategies. In G. Mutangadura H. Jackson and D. Mukurazita (eds) 1999. *AIDS and African Smallholder Agriculture*. SAfAIDS, Harare, pp. 14-24.

Neema, S. 1999. Afflicted and affected: consequences of HIV/AIDS on a farming community in Uganda. In G. Mutangadura H. Jackson and D. Mukurazita (eds) 1999. *AIDS and African Smallholder Agriculture*. SAfAIDS, Harare, pp. 70-78.

Ngwira, N., S. Bota and M. Loevinsohn, 2001. HIV/AIDS, Agriculture and Food Security in Malawi: Background to Action. RENEWAL Working Paper No. 1, ISNAR, The Hague and Ministry of Agriculture and Irrigation, Lilongwe. <http://www.isnar.cgiar.org/renewal/index.htm>

Ngwira N. 2001, Women's Property and Inheritance Rights in Malawi. Field Report No.1. Chancellor College, Gender Studies Unit.

Ngwira, N., E. Kayambazinthu, E. Kamchedzera, 2000. Double Jeopardy : a situation analysis of girls, orphans, disabled and working children's access to basic education in Malawi, UNICEF, Lilongwe, Malawi.

Page, S.L.J. 2000. Longevity in HIV+ Mothers: The Need to Promote Good Health, Household Food Security and Economic Empowerment to Ensure Family Survival in Southern Africa. Paper prepared for the Expert Group Meeting on HIV/AIDS and Gender, Windhoek, Namibia, 13-17 November 2000, draft.

- Packard, R.M. 1989. "White Plague, Black Death: Tuberculosis and the Political Economy of Health and Disease in South Africa". University of Natal Press, Pietermaritzburg.
- Parker, J, I Singh, and K Hattel. 2000. *The role of microfinance in the fight against HIV/AIDS*. UNAIDS background paper: UNAIDS.
- Piwoz, E., and E. Preble. 2000. HIV/AIDS and nutrition: A review of the literature and recommendations for nutritional care and support in Sub-Saharan Africa. SARA Project, U.S. Agency for International Development, Washington, D.C.
- Rao Gupta, G. 2000. Gender, sexuality, and HIV/AIDS: The what, the why, and the how. Plenary address prepared for the XIIIth International AIDS Conference organized by the International Center for Research on Women, Durban, South Africa.
- RENEWAL 2003 Report on the Regional Workshop on Methods and Indicators. Jinja, Uganda: November 26-28, 2002 (www.isnar.org/renewal)
- Ross, J. S., and E. L. Thomas. 1996. Iron deficiency anemia and maternal mortality. PROFILES 3 Working Notes Series, No 3. Washington, D.C.: Academy for Educational Development.
- Rugalema, G. 2000 Coping or Struggling?: A Journey into the Impact of HIV/AIDS in Southern Africa. Review of African Political Economy. Vol 28, No. 86 (December 2000)
- Scrimshaw, N.S., Taylor, C.E. and Gordon, J.E. 1968 Interactions of Nutrition and Infection. WHO Monograph Series No. 37, WHO, Geneva.
- Semba, R., Miotti, P. et al. 1994 Maternal Vitamin A Deficiency and Mother-to-Child Transmission of HIV-1. *Lancet* Vol. 343, p1593-7.
- Semba, R. 1998 The Role of Vitamin A and Related Retonoids in Immune Function. *Nutrition Reviews*. Vol. 56, (1, Part 2), pS38-48.
- Semba, R. D., and A. M. Tang. 1999. Micronutrients and the pathogenesis of human immunodeficiency virus infection. *British Journal of Nutrition* 81: 181-189.
- Shah, M.K., Osborne, N., Mbilizi, T. and Vilili, G. 2001. Impact of HIV/AIDS on agricultural productivity and rural livelihoods in the Central Region of Malawi. CARE International, Malawi.
- Sperling, L., 1989. Food acquisition by the Samburu herders during the drought of 1983/84, in T.E. Downing, K. W. Gitu, and C. M. Kamau (eds) *Coping with Drought in Kenya: National and Local Strategies*. Boulder and London: Lynne Rienner Publishers, 264-279.
- Stillwaggon, E. 2002. HIV/AIDS in Africa: Fertile Terrain. *Journal of Development Studies* Vol. 38 (6), 1-22.
- Storey, D.M. 1993 Filariasis: Nutritional Interactions in Human and Animal Hosts. *Parasitology* 107 (Suppl), pS147-58.
- Tebas, , P., Powderly, W.G., Claxton, S. et al. 2000 Accelerated bone mineral loss in HIV-infected patients receiving potent antiretroviral therapy. In: Program and abstracts of the 7th Conference on Retroviruses and Opportunistic Infections. Alexandria, VA: Foundation for Retrovirology and Human growth 2000: 114 (abstr).
- Thomas J.C., Clark M., Robinson J., Monnet M., Kilmarx P.H., Peterman T.A., 1999. The social ecology of syphilis. *Social Science & Medicine*, Vol 48, 1081-1094.

Tomkins, A., and F. Watson, 1989. Malnutrition and Infection. United Nations Administrative Committee on Coordination/Sub-Committee on Nutrition (ACC/SCN) State-of-the-Art Nutrition Policy Discussion Paper No. 5, ACC/SCN, Geneva.

Topouzis, D (1998). "The Implications of HIV/AIDS for Rural Development Policy and Programming: Focus on Sub-saharan Africa". Sustainable Development Department, FAO and HIV and Development Programme, UNDP.

UNAIDS 1999. Gender and HIV/AIDS: Taking stock of research and programs. UNAIDS Best Practices Collection, Geneva. www.unaids.org/publications/documents/human/gender/una99e16.pdf

UNAIDS/GTZ 2002 Mainstreaming HIV/AIDS: A Conceptual Framework and Implementing Principles, June 2002.

UNFPA 2001 Strategic Options for HIV/AIDS Advocacy in Africa, June 2001.

UNICEF 1990 Strategy for Improved Nutrition of Women and Children in Developing Countries, UNICEF, New York.

USAID 2002 Subsistence Agriculture AIDS Brief for Sectoral Planners and Managers
www.und.ac.za/und/heard

van der Veen, R.G.W. 2000. Learning Natural Resource Management. In: Guijt, I., Berdegue, J.A. and Loevinsohn, M., 2000. Deepening the Basis of Rural Resource Management: Proceedings of a workshop held at ISNAR, The Hague 16-18 February 2000, International Service for National Agricultural Research and Red Internacional de Metodología de Investigación de Sistemas de Producción, pp. 15-22.
<http://www.cgiar.org/isnar/environment/nrm-basis.htm>

Welbourn A 1998 Stepping Stones: A training package in HIV/AIDS, communication and relationship skills. London. ActionAid.

World Bank 1993 Sexually Transmitted Infections: Prevention and Care Project, Zimbabwe, Staff Appraisal Report No. 11730-ZIM.

WHO. New Data on the Prevention of Mother-to-Child Transmission of HIV and their Policy Implications: Conclusions and recommendations. Geneva, 11-13 October 2000, approved January 15, 2001 [Cited 2001 Jan 19]. Available at www.unaids.org/publications/documents/mtct.

Yamano T. and Jayne, T. 2002 Measuring the Impacts of Prime Age Adult Death on Rural Households in Kenya. Michigan State University Staff Paper 2002-26.