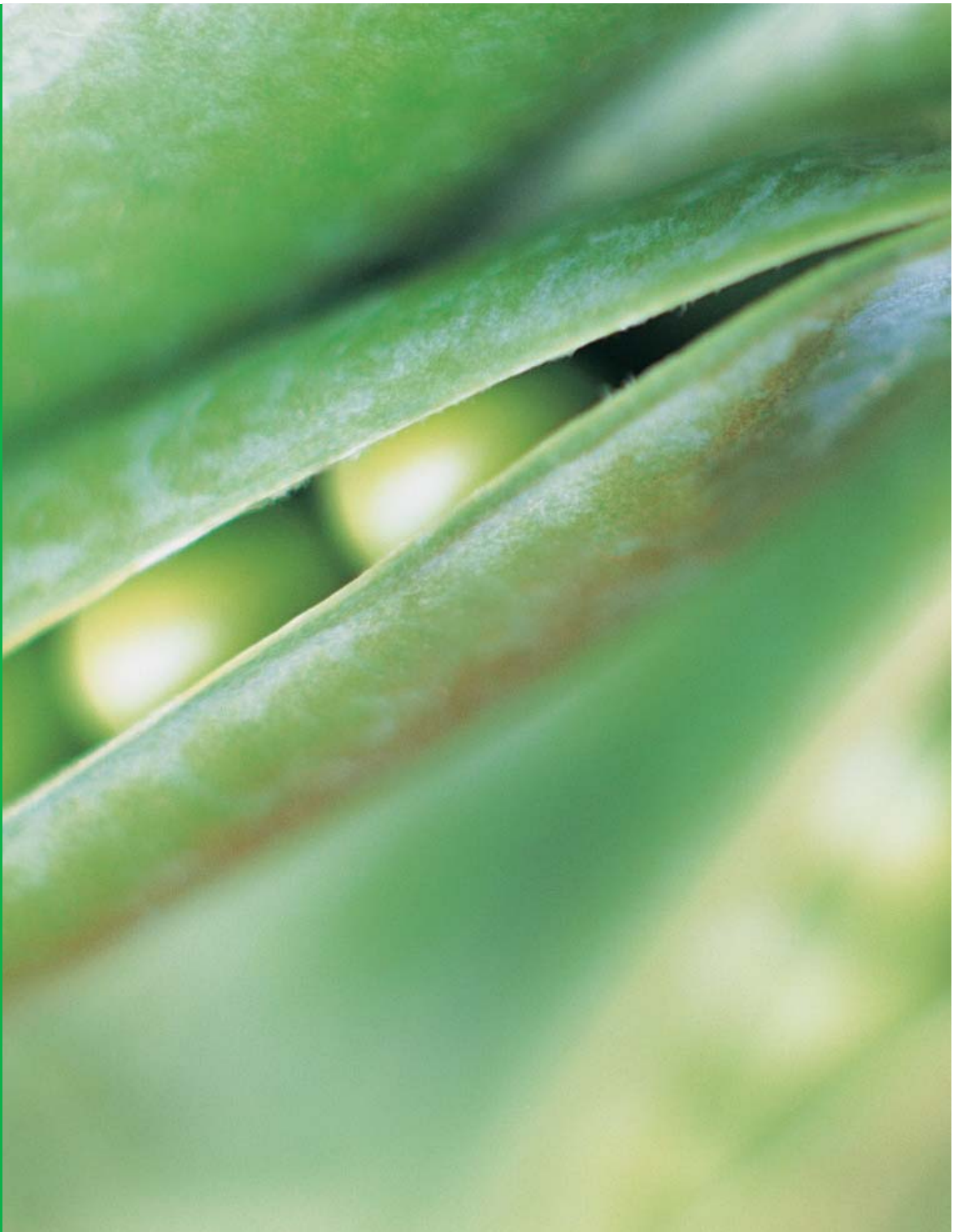


# AGRICULTURE IN THE TIME OF HIV/AIDS

A REPORT ON THE SITUATION IN SUB-SAHARAN AFRICA  
PREPARED FOR NORAD

BY STEIN W. BIE

NORAGRIC REPORT NO. 42  
DEPARTMENT OF INTERNATIONAL ENVIRONMENT AND DEVELOPMENT STUDIES  
NORAGRIC



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Noragric Report No. 42  
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**Noragric  
Norwegian University of Life Sciences**

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## Preface

In November 2005 Norad asked Noragric to prepare a review on the current views on the relationships between agriculture, HIV infections and AIDS-related diseases in sub-Saharan Africa, on the basis of a limited desk study of relevant literature. The Terms of Reference (in Norwegian) are found in Appendix 1.

In order to facilitate a wider dialogue on issues that directly affect more than 20 million Africans and 40 million people worldwide, this report has nevertheless been written in English. The report is intended to support the development of strategies and projects by Norwegian authorities, Norwegian NGOs and their cooperating partners in sub-Saharan Africa and elsewhere.

HIV/AIDS is not unique to the rural primary industries (agriculture being the main such economic activity in sub-Saharan Africa), nor to the countryside, nor to the cities. The HIV virus is universal and can infect the youngest and the oldest, women and men, even a foetus in a mother's womb. The infection rate is now so high that it is best described as a pandemic, a wide large and universal epidemic. Most disturbingly it appears to hit young people, often in their most productive years, the hardest.

Neither is HIV/AIDS unique to sub-Saharan Africa. But unlike other continents the majority of its people live in rural areas, and the majority of them are engaged – in one way or another – in agriculture. Agriculture is the backbone of many national economies, but it also harbours the deepest poverty, as severe or more severe than urban poverty. In spite of global political commitments through the Millennium Development Goals food security in sub-Saharan Africa is not improving.

Over the last 20-30 years agriculture has been a neglected economic sector by both national governments and international aid agencies. Other sectors have been given priorities for development in sub-Saharan Africa, as the short to medium term rates of return on investment were deemed unfavourable by international lending agencies. These 20-30 years also coincide with the arrival and growth of the HIV/AIDS pandemic.

Often considered unrelated, this report, drawing on review papers and original research mostly published during the last 2-3 years, and in particular reflecting on the HIV/AIDS conference in South Africa in 2005 with many African contributions, suggests that agriculture both is severely affected by HIV/AIDS and that the state of agriculture significantly influences the spread of HIV. The dynamics of the pandemic have shifted from a lorry-driver's disease to an infection primarily confronting young rural women. HIV/AIDS now undermines the fabric of rural societies. The driving forces are now closely interwoven with severe rural poverty forcing people to adopt risky sexual behaviour to meet basic needs in agricultural societies.

In a situation of a pandemic very many interventions are required and possible, ranging from purely medical research and treatment, through behavioural changes, to the strengthening of traditional and new social safety nets. This report is about **agriculture** in the time of HIV/AIDS. Many other reports could also have been written with other approaches – medical, public health, legal, human rights, economics, condom use, religious etc. etc. - that is in the nature of a pandemic. This

report focuses on Eastern and Southern Africa (Norway's main focus in its development assistance). Sub-Saharan Africa is larger and other trends exist in parts of Central and West Africa.

The report is meant to guide the attention of its readers on the structural issues underlying the current state of the HIV/AIDS pandemic as it affects agriculture. It does not attempt to offer ready-made recipes for individual interventions but reflects on needs to see any actions in the context of the structures prevailing for agriculture in sub-Saharan Africa. Most of the literature quoted has origins in non-governmental organizations and academic institutions operating in sub-Saharan Africa, and their reactions and observations as they confront world literature with their own field observations.

### **Acknowledgements**

To see agriculture in sub-Saharan Africa through an HIV/AIDS lens has required the vision of several people, in the past and for the preparation of this report. I am particularly grateful to Michael Loevinsohn, now of Applied Ecology Associates, now in Wageningen, The Netherlands; Stuart Gillespie of the International Food Policy Institute, Washington, D.C., USA; Hans Binswanger of The World Bank, Washington, DC; Marcela Villarreal of FAO, Rome, Italy; Gabriel Rugalema, now of FAO, Rome (and previously a student at Noragric); Kanyo Nwanze, previously of the West African Rice Development Association, now with IFAD in Rome, Italy; Dympna Byrne, now of the International Confederation on Midwives, The Hague, The Netherlands; and Tony Barnett of the University of East Anglia, UK. Michael Loevinsohn has contributed specific ideas to this report and Marte Qvenild of Noragric has helped with research on PRSPs. Cassandra Bergstrøm, also of Noragric, is thanked for valuable comments on an earlier draft. I am also indebted to comments subsequently received from staff members of Norad who reviewed the earlier draft, and from members of the Norwegian NGO community in a hearing arranged by Norad. Not all comments have been incorporated but all have been considered.

The research for this report was concluded in mid-2006.

## Executive summary

This report attempts to see agriculture through an HIV/AIDS lens, but also HIV/AIDS through an agriculture lens. Agriculture in sub-Saharan Africa consists of many farming systems, many of them representing subsistence farming, some bordering on smaller commercial farming enterprises. Some of them are close to markets, some of them are remote. They are all run by people, rural people, who face many challenges. HIV/AIDS is among the most serious ones. Rural people are naturally risk-averse. With limited capital reserves they cannot afford to take serious economic risks. Yet they are faced with risks that are ultimately interwoven with both their finances and their personal lives.

The spread of HIV and subsequent AIDS-induced diseases in sub-Saharan Africa (SSA) have over the last 20-30 years been closely related to the decline of both food security and the structural support to the primary rural industries (particularly agriculture) there. Poor nutritional status (rampant malnutrition and undernutrition<sup>1</sup> in most age groups) and a heavy general disease burden (malaria, venereal diseases, parasitic infections) predispose for HIV infection. Mycotoxins in staple foods (particularly aflatoxin) may further weaken the human immune system.

The late recognition of the rural impacts of HIV/AIDS by national governments has delayed meaningful action. Even today only few SSA countries have substantial analyses of the rural and agricultural situations in their Poverty Reduction Strategy Papers. Few countries have national policies that give high priority to agriculture and the link between agriculture and HIV/AIDS is therefore missed.

In sub-Saharan Africa (unlike in some other regions) HIV transmission occurs overwhelmingly through heterosexual intercourse. Although the risk of transmission of the HIV virus to a healthy person through heterosexual intercourse is normally low (1:500 – 1:1000), a weakened immune system greatly increases the risk unless a condom is used. There are clearly other routes of transmission, the statistics are uncertain. We know there is considerable hidden male homosexuality, we know there is use of dirty needles, both by doctors and nursing staff and among drug addicts. We know infected blood is used, we know of unsafe medical and dental practices. We know the status of the immune system is important regardless of the mode of transmission. But heterosexual transmission seems to be by far the most important.

Once infected, the progression from HIV infection to fully blown AIDS with associated fatal opportunistic infections and cancers depends on the speed of degradation of the patient's immune system. Nutritional status and presence, or absence of other (non-HIV) infections, are important. Both nutrition and the prevalence of other diseases are often linked to food production, thus agricultural activities.

Being HIV-negative in a situation of an HIV pandemic, involves decision-taking under uncertainty, where the uncertainty is the risk of becoming HIV-positive seen in

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<sup>1</sup> Malnutrition refers to an imbalanced diet which induces shortages of essential nutrients, under-nutrition refers to generally low food intakes (not necessarily imbalanced) often associated with starvation or near-starvation.

the light of other risks. In impoverished rural societies, where alternative individual or family assets (e.g. cattle, land, agricultural implements) have been exhausted (often as a result of AIDS in the family with needs for medicines, care and funerals) additional needs for food, medicines, school fees etc. can no longer be met by risk-free mobilization of fixed assets. Implementation of structural adjustment models have also reduced the availability of free services without the emergence of private providers serving poor rural people, and world trade agreements may further encourage the need for cash transactions. Two modes of resource mobilization often used are seasonal labour migration (by men but sometimes also women) and transactional sex conducted by young girls and women. Both are observed to greatly increase the risks of HIV infections. Recent research in Eastern and Southern Africa now suggests that transactional sex (occasional bartering of sexual services for food, cash or other resources) by rural girls in the 15-25 years age group now probably constitutes the major avenue for HIV infection. Others also exist, including traditional sexual misuse in the family, rape, mother-to-child transmission in the womb or through breast-feeding, commercial (organized) prostitution, addicts' injection needles, medical equipment and procedures, and male homosexual activities.

When rural poverty is at the root of risky behaviour, the rate of HIV transmission can only be effectively reduced by reducing rural poverty, which again means increasing effective income in agriculture, and promoting a society that provides for its people in food, in health and in education. This is probably at the root of the fact that information campaigns on their own, both encouraging less risky behaviour (faithfulness, delayed sexual debut, condom use), and informing about the nature and risks of HIV/AIDS, have had limited impacts particularly in rural areas. Disparities in economic development between urban and rural areas, or within rural areas, create potentials for bartering sex for cash, goods and services (including the rich uncle and Sugar Daddy phenomena).

Local social security networks, possibly based on the Farmer Field Schools (spelling according to FAO website) principles (then called Farmers' Life Schools or similar), (spelling according to FAO and UNDP websites) have been found promising in Eastern and Southern Africa, combining information, behavioural advice and access to assets that can be mobilized as alternatives to transactional sex. By informing about HIV/AIDS risks (making people more risk-averse) and reducing the need for risky behaviour, the probability of infection can be significantly reduced. The International Labour Organization (ILO) has suggested using microfinance mechanisms to achieve this; national and international NGOs have developed a plethora of such tools.

In the time of HIV/AIDS many interventions may be valuable at individual, family, community and national levels. But unless the underlying structural problem of rural poverty is addressed, only sporadic and individual progress will be made. It is therefore valuable to see agriculture through an HIV/AIDS lens, and to guide agricultural interventions and development in that light.

It is unfortunately a fact that rural poverty in general, and the poverty of agricultural people specifically, do not feature highly on priority lists of Norwegian official development assistance nor of many other bilateral or multilateral donors. It has been difficult, therefore, to gain understanding for the HIV/AIDS lens to be used in the fight against rural poverty.



Many players will be involved in attempting to change this situation; it is a complex issue. Central to interventions is a strong appreciation of gender issues. It is essential to strengthen the roles and position of girls and women in society, to give them freedom to choose, and to gain respect from men, families and societies for their stance. But this cannot be done by declarations of good intent; it involves fundamental transformations in impoverished rural societies.

## **1. THE EPIDEMIOLOGY OF HIV AND AIDS**

### **1.1. WHAT YOU NEED TO UNDERSTAND MEDICALLY ABOUT HIV/AIDS**

The Human Immuno-deficiency Virus (HIV) infects humans through exchange of body fluids. HIV affects the natural immune system of the body by reducing the level of the infection-fighting T-cells of the white blood corpuscles. The HIV (virus) replicates in the human body and the victim ultimately displays an Acquired Immune Deficiency Syndrome (AIDS). Symptoms include major breakdowns in the patient's ability to fight opportunistic infections or cancers otherwise treatable in non-infected individuals with normal, natural immune systems. HIV/AIDS is for most patients a platform for fatal diseases.

The probability of transmission of a virus depends on the virulence of the pathogen. HIV has a low probability of transmission between otherwise healthy individuals (1:500 -1:1000 in sexual encounters (World Bank, 1997)), and much lower than e.g. Hepatitis B or herpes 2 viruses. The vulnerability of an individual to a virus infection, including a HIV-infection, depends on the strength of his/her immune system, which is affected by physical barriers (e.g. unbroken skin or intact mucus membranes), nutritional status, physiological stress and the presence of other infections and parasites (Stillwaggon, 2005), as well as other factors including food toxins. Thus, among nutritionally malnourished or undernourished individuals and/or patients already suffering from other infections (e.g. malaria, parasites) the likelihood of infection from a single encounter with HIV is much greater than in a healthy, well-nourished individual. There is currently no vaccine against HIV that would artificially boost the natural immune system to reject this virus<sup>2</sup>.

Two special cases for transmission exist in the mother-to-child sphere. The probability of an HIV-positive mother giving birth to an HIV-positive baby is high (about 1:3), as the virus appears to be able to travel across the placenta during pregnancy. The probability of an HIV-positive mother passing on HIV to an otherwise HIV-negative baby through breast feeding (or similar use of mother's milk) is also high, apparently depending on the feeding pattern. HIV can be secreted in the milk of HIV-positive mothers and/or through minor injuries around the nipples often associated with breast feeding. The exact uptake of the virus in the baby is not well known. Drug therapy to lessen the changes of mother-to-child infections is available. WHO recommendations suggest limiting breast feeding to 6 months in order to reduce the risk of transmission.

In general the number of exposures of an individual to HIV, and the mode of exposure to the virus, also influence the likelihood of becoming HIV-positive. Frequent exposures may not only be to HIV but simultaneously also to other infections that greatly increase the probability of transmission of HIV (e.g. sexually transmitted diseases that both destroy natural membranes and weaken the immune system, e.g.

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<sup>2</sup> Several strains of the HIV (virus) have been identified. Some appear more virulent than others, and there are geographic variations. The virus may continue to mutate. These facts are not central to the arguments contained in this report.

syphilis, gonorrhoea, herpes, chlamydia or physiological stress associated with the effect of intravenous narcotics misuse)<sup>3</sup>.

When exposure to HIV has led to AIDS, there seems currently to be no complete medical treatment available. Current anti-retroviral (ARV) treatments (ART) may delay the onset of AIDS from the initial HIV infection by suppressing the multiplication of the virus in the patients<sup>4</sup>. There is currently no cure.

A simple model for HIV/AIDS may be:

1. Mode of HIV-infection
2. Vulnerability to infection
3. Ability to withstand the effects of the infection

There are a very large number of papers in world literature discussing the medical aspects of HIV/AIDS yet very little literature viewing agriculture and agricultural development through “an HIV/AIDS lens” (*sensu* Loevinsohn and Gillespie, 2003); prior to a major conference in Durban in April 2005 there was a great scarcity of factual data analysed through this “lens” (but many anecdotes).

This report, also building on the reviews of the Durban conference, attempts to consider HIV/AIDS in the context of agriculture and agricultural development in sub-Saharan Africa, the sub-continent with a very high number of HIV infected individuals.<sup>5</sup> It uses the simple 3-element model above to analyse the relationships between agriculture and its farmers and associated people, and HIV/AIDS.

## 1.2. AGRICULTURE AND THE MODE OF HIV-INFECTION

In sub-Saharan Africa the overwhelming number of transmissions of HIV is through heterosexual relationships involving sexual intercourse with penetration<sup>6</sup>. Whilst no exact figures exist, it is estimated that over 90% of new infections occur this way. In other areas of the World other pathways play greater roles (e.g. male homosexual relationships, intravenous drug addiction, dirty needles in administering medicines by injection, unclean medical equipment (also in traditional medical treatments), blood transfusions). The key to the understanding of the spread of HIV in sub-Saharan Africa is therefore to understand the patterns and driving forces of heterosexual

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<sup>3</sup> Reports of sporadic genetic immunity in individuals to HIV have been published, and there have been suggestions that some populations may be genetically less vulnerable than others. Whatever the merits of these reports may be, for practical purposes and in the context of this paper, these are not discussed further.

<sup>4</sup> There has been at least one report in international media in 2005 of ART seemingly eliminating HIV in an infected individual. Whilst encouraging if true (i.e. *a treatment*), this singular case does not alter the assumption that an HIV-infected individual has got a lifelong infection.

<sup>5</sup> There seems little point in trying to argue where HIV/AIDS prevalence is the highest globally. Major errors in estimates are likely, also for UNAIDS figures. It suffices to say that SSA may have 20-25 million HIV positive individuals, but that figures are high also in India, and growing in many other non-industrialized countries. The global total may well exceed 41 million individuals. In many countries the prevalence rate is above 5%, in some above 10%. Local infection rates vary greatly. It is simply a huge problem.

<sup>6</sup> In addition there are mother-to-child transmissions

behaviour. If unsafe sexual encounters are minimized, then the further spread of HIV is greatly reduced.

In the early 1980s anecdotal evidence suggests that HIV-infections were primarily an urban phenomenon that spread to rural areas through trade routes (male lorry drivers, male government officials on duty travel, including agricultural extension officers). Rural infection rates were initially low and agricultural production and rural lives were little affected. During the last 15 years the pattern has changed and HIV infection rates in many SSA countries are as high in rural areas as in towns and cities. Earlier estimates in rural populations indicated that males were more likely to be affected than females. Today there is much evidence that in many areas in SSA the group with highest infection rates are young girls 15-25 years of age. The effects on agricultural production and on rural life have become significant.

To attempt to understand why this change has taken place, it may be useful to look at the role and standing of agriculture, and the role of farmers, in SSA economies since around 1980, when HIV/AIDS was first recognized. (Although it must be added that SSA governments were initially extremely slow in recognizing publicly the HIV/AIDS challenge.) During the last 25 years national governments and international aid organizations have changed priorities from the primary rural industries to other development pathways for poor SSA countries. Most international aid and lending institutions have reduced their investments from 20-30% of their funds to primary rural industries to 3-7% over this period (Norway: 2.7% in 1999, 3.5% in 2005). 25 years ago a large proportion of rural households were practicing subsistence agriculture or were near food self-sufficiency (albeit at a low nutritional level). The monetarisation of the economies, the absence of local, national and regional markets offering predictable and fair prices (whether state-run or private), the opening up of national markets to cheap food imports (often subsidized food from industrialized countries) through bilateral or multilateral trade agreements (lately including globalisation and World Trade Organization issues) and a host of structural adjustment policies have dramatically worsened the position of many, if not most, rural communities in SSA. In spite of honourable 1996 World Food Summit ambitions and Millennium Development Goals for 2015, many rural populations operate today in much more risky production environments than 25 years ago. Food security at individual and household level is deteriorating in SSA, not improving. Yields per unit input (area, labour, water) have been declining for most staple foods, also because less productive land has been brought into cultivation, or through the deterioration of the existing soil resources. The need for cash to sustain agricultural production through purchases of input (in particular fertilizers, seeds and for plant and animal protection) has greatly increased and cannot be met by the sale of agricultural surplus, as market conditions are not conducive. Liberalisation of national economies and privatisation of local services (including health services and education) – steps advocated by most donor countries (including Norway) and international financing institutions (where Norway is commonly a member) - have further increased the demand for cash. There is little doubt that rural poverty is on the increase in many parts of SSA, further exacerbated by wars, civil strife, poor governance and crime. Chopra (2004) has presented a major review and analysed studies on external economic factors on HIV/AIDS and other health issues in Southern Africa.

What has this increase in rural poverty to do with the infection rates of HIV/AIDS? The critical question is of course how the cash earning needs of poor rural people can be met. Medicines, school fees, foods not grown on the farm, fertilizers, seeds, funeral expenses, are examples of items for which cash or near-cash equivalents are needed. There is now ample evidence accumulating that sexually risky behaviour in the form of transactional sex for cash, food and favours has become a major coping mechanism in many parts of SSA (Bryceson and Fonesca, 2005). Transactional sex is different from prostitution or recreational sex, or from sex in established relationships (e.g. marriage), all of which also may represent risks of HIV infections. Transactional sex is an economic coping mechanism very largely practiced by women (independently or urged on or forced by other members of her family) in order to raise essential resources for her family. It is not an 'occupation' like professional prostitution (which of course may also have roots in economic deprivation), but an activity sporadically embarked upon when financial and related needs arise and opportunities avail themselves. It could be argued whether the activity is consensual or not. Intense social pressure from e.g. the family may override natural reluctance to engage in sexual activities. Physical threats may also be involved. Young girls have little opportunity to resist such pressures. It would be misleading to call this 'consensual' although the pressure is different than in classic rape cases. These heterosexual opportunities are essentially generated by men seeking sexual encounters against payment of money, food or favours that they control. The men availing themselves of transactional sex opportunities are thus not the poorest but individuals wielding some financial or cultural power from which the women believe she and/or her family can benefit through 'sale' of sex. The negotiating strength of a woman engaging in transactional sex is low, thus her insistence on the use of condom (often successfully achieved by professional prostitutes) is often unsuccessful, even if one or both partners are aware of the dangers of unprotected sex. Whilst no current research can estimate the proportion of HIV-infections originating through the mechanism of transactional sex, there is accumulating evidence that this may well be the most important mechanism in poor rural communities in SSA. Poor women, particularly poor young women, in poor rural communities in SSA appear to increasingly use or be forced by social pressure or physical threats, into transactional sex for raising resources. The review by Bryceson and Fonseca (2005) also on other studies in Malawi and other parts of Eastern and Southern Africa, provides clear indications that this high-risk coping mechanism is now becoming very common. The perilous economic state of women and their poor families (whether the woman is a wife, a daughter, a divorcee or a widow) is exploited by somewhat richer or more influential men who pay for occasional sexual favours by money, food or other services – and potentially HIV transmission. Resource inequality render such behaviour more likely, the presence of richer men in poorer societies constitute a risky scenario ("the sugar daddies").<sup>7, 8</sup> Recent studies in India (Loevinsohn, 2005) confirm this also in the Indian context. Inequalities may arise if some parts of a region benefit more than another, e.g. through a development project. Farmers of the upper part of a watershed may benefit less from a watershed intervention than farmers further downstream.

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<sup>7</sup> Similar patterns of transactional sex has been reported from fishing communities along Lake Victoria (Eirik Janssen, pers.com. 2004), and by Alison and Seeley (2004).

<sup>8</sup> Recent scandals with UN Peacekeepers on mission in West and Central Africa illustrate another type of transactional sex.

The increasing role of HIV transmission through transactional sex signals structural economic problems and social inequalities in poor rural societies. Whilst prostitution and sexual misuse of female family members by relatives may constitute significant pathways of HIV infections, transactional sex is a relatively new coping mechanism that has opened a huge back door to infection of rural communities. This mechanism may now be more important than the seasonal labour migration of males and females between the countryside and the urban or industrialized areas of a nearby country. The latter phenomenon was clearly an early driver of HIV-infection and itself reflects resource and social inequalities, and inequalities in access to cash and cash-like equivalents, between rural and urban areas.

The neglect of rural communities, and the increasing poverty of sections of the rural communities most often associated with an agricultural industry with growing external constraints, is arguably at the root of a significant proportion of HIV infections in sub-Saharan Africa (Chopra, 2004; Seaman and Petty, 2005). The failure of governments and the international community to understand and prioritise rural livelihood issues in order to stem the need for transactional sex in the time of HIV/AIDS, is having devastating effects (Bryceson and Fonseca, 2005).

### **1.3. VULNERABILITY TO HIV-INFECTIONS IN AGRICULTURAL SETTINGS**

The HIV (virus) has a low transmission rate among normally healthy individuals, but good health and a normal immune system are not sufficient factors to preclude HIV infections. Repeated exposure to the virus e.g. through an active sex life increases the risk of infection also in these individuals. The general immune system of the individual, including physical barriers to virus penetration (intact skin, lack of open sores, healthy mucus membranes, normal birth channel status) and immunological response patterns associated with white blood cells and other internal mechanisms, is affected by nutritional state, physiological and psychological stress, and other medical conditions (including wounds and other bacterial, viral and parasitic infections), and possibly toxic effects (environmental toxins and mycotoxins) (Stillwaggon, 2005). There are also physical factors associated with sexual intercourse – natural genital lubrication may be absent in forced or unwanted situations, increasing the risks for wounds.

Factors lowering the normal state of the immune system are present in all populations, rich and poor. Poor people, however, tend to be more exposed to risk factors. They normally have a lower nutritional status, with deficiencies in critical minerals and trace elements known to influence the immune system, vitamin deficiencies, and protein and/or energy shortages compared to recommended levels. Within-household variabilities in availability of food to individuals (the elderly, the pregnant, younger or older children) can create individual deficiencies even if the overall household nutritional level may appear adequate. Immune system failures are associated with decreasing food security. Lowered food security may take many forms, including lesser quantities of otherwise balanced diets, but also increasingly unbalanced diets, normally with shortages in protein intake or proteins with imbalanced amino acid composition for humans. Shortages in mineral uptake, and notably iron and zinc, have significant implications for the immune system. Together with Vitamin A these

deficiencies have direct influence on the production of T-cells. Deficiencies in other minerals and vitamins also influence the immune system. Stillwaggon (2005) has reviewed the sizeable medical and nutritional literature pertaining to nutrition, the immune system and vulnerability to HIV infection. Poor people have poor nutrition – it is a consequence of poverty – and most (but not all) poor people live in the countryside in sub-Saharan Africa, and thus largely in agricultural communities. Although near the source of some foods, poor families may not be able to produce or compose an adequate diet, and lack the purchasing power to buy complementary foods in the marketplace. Poor rural people are therefore more vulnerable to nutritionally weakened immune systems. The existence of aflatoxin and possibly other mycotoxins (produced by specific moulds on food and all known to have strong immuno-depressant actions) in some of the staple foods (and beer) widely consumed by poor people in sub-Saharan Africa (groundnuts, maize, sorghum) may be conducive to general immune system weakening. A special situation, and very common in poor rural communities, is the generally inadequate access to clean water, both for drinking and personal hygiene. Gastric infections, although common and often considered trivial (although major killers both for the young and the elderly), directly affect nutritional uptake and induce malnutrition and undernutrition even if food intake is balanced and normal. A series of studies have evaluated such relations in several sub-Saharan countries (Siika et al, 2005, in Guinea; Senefeld and Polsky, 2005, in Zimbabwe; Chapoto and Jayne, 2005, in Zambia; Maina et al., 2005, in Uganda; Onyango and Swallow, 2005, in Kenya; Bishop-Sambrook et al. 2005 in Ethiopia; Fisher and Munk, 2005, and Bryceson and Fonseca, 2005, in Malawi; Tumushabe, 2005, in Tanzania; Dominquez et al., 2005, in Mozambique; Chopra, 2004, and Hunter and Twine, 2005, in South Africa; Donovan and Bailey, 2005, in Rwanda – there are several others.)

Whilst the nutritional level of otherwise poor populations in Asia and Latin-America has in general improved, recent indications are that sub-Saharan Africa continues to be plagued by increasing food insecurity, including increasing malnutrition and undernutrition at the level of individuals. Decreasing labour availability (through disease) often leads to cultivation of less nutritious crops (“tuberization”) and the abandoning of livestock. A nutritionally weakened individual engaging in unsafe sex appears to be more prone to HIV infection. Additionally, agricultural activities and rural living often expose individuals to cuts and similar injuries that may provide entry points for infections, including HIV.

The general disease burden carried by individuals in sub-Saharan Africa appears to be high. Parasitic diseases are common, particularly in rural areas. Malaria has been implicated in the spread of HIV. There are more than 300 million malaria cases annually in SSA. Apart from the general weakening of the immune system, malaria appears to stimulate HIV replication in the body, and HIV positive individuals have a higher malaria parasite load than non-HIV-infected, thus potentially adding to the spread of malaria, as well as HIV<sup>9</sup>. Malaria control is therefore essential for reducing HIV transmission and severity of the HIV infection itself (Corbett et al., 2002). Other parasites, including helminthic and filarial infections (intestinal worms, bilharzia) also appear to predispose for HIV infection, and increase the HIV load carried by the

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<sup>9</sup> Possible transmission of HIV by the bloodsucking malaria mosquitoes themselves has not been established.

patient. Parasite control, which also includes controlled use of and exposure to slow flowing or standing water, is therefore an important component of immune system considerations. Poor rural people are particularly exposed to parasites through infected drinking and washing water, poor hygienic conditions, and agricultural practices involving contacts with water (irrigation, watering of crops and animals).

Since sexually transmitted (venereal) diseases (STD), e.g. syphilis, gonorrhoea, genital herpes, chlamydia, in addition to immunological weakening of the patient also causes breaches of mucus membranes, it has been suggested that the treatment of STD may in itself offer some protection against HIV infection. There are indications from trials in East Africa that if STD treatment is combined with antihelminic and Vitamin A supplements, the patient appears less vulnerable to HIV infection (Stillwaggon, 2005, has reviewed the epidemiological evidence in detail).

Poor rural people in sub-Saharan Africa are exposed to heavy disease and parasitic loads through impoverished rural life and agricultural practices. Recent major global initiatives to combat malaria (in which Norway is significantly involved through funding) may, if successful, also have positive consequences for the reduction in spread of HIV. More neglected parasitic infections may also need to be tackled if significant progress is to be made in relation to HIV.

Apart from mother-to-child transmission of HIV, there are strong behavioural factors in the transmission of HIV, most involving sexual activities. Whilst some HIV infections may result involuntarily from serious crime (i.e. rape, stabbings) or inadvertently through medically administered blood transfusions, injections or similar, the vast majority of infections arise from voluntary (or socially pressured) behaviour: consensual risky sex or shared needle use by users of narcotics. In the previous section the upsurge of transactional sex between consenting – often socially pressured – individuals was identified as a major conduit of HIV in present-day sub-Saharan Africa. Increasing poverty and food insecurity have rendered transactional sex more socially acceptable in societies where alternative income generation or asset disposal have been exhausted. There appears to be a cultural change in many societies towards weaker social condemnation both at family and group level of such practices. Whilst previous social norms may (regrettably) have tolerated a level of (commercial) prostitution, and some sexual exploitation of young girls by family members or teachers (all of which may involve risky sex, and may of course not be strictly voluntary from the point of the female), the upsurge of transactional sex in sub-Saharan Africa in general, and clearly documented in Eastern and Southern Africa, has added a huge new and dangerous dimension to the transmission of HIV. Whilst religious institutions seem universally to condemn all such extramarital sexual practices, the active participation of religious leaders in creating social controls against risky sex practices seems highly uneven. Within the two dominant formal religions in sub-Saharan Africa – Christianity and Islam – opinions vary strongly as to whether condoms should be advocated to lessen the risk of sexual practices of which the religions themselves disapprove, or indeed whether condoms, which also have a birth control effect, can be tolerated even with established relationships (e.g. marriage).<sup>10</sup> Studies in Malawi (see Bryceson and Fonseca, 2005, for a review)

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<sup>10</sup> There seems to be no serious study on the effect of religion on the prevalence of HIV/AIDS in sub-Saharan Africa. It has been assumed that the practice of a strict moral codex may keep the number of extramarital sexual encounters down.



suggest that customs of extramarital encounters have not disappeared in more traditional village settings and are additional to transaction sex. Traditional 'rights' for elders to have sexual encounters with young girls, or the vulnerable situations experienced by widows and divorcees, add dangers.

Most studies in sub-Saharan Africa indicate that isolated HIV/AIDS information campaigns appear to have had marginal influence on sexual behaviour (McDonagh, 2001). Knowledge of the mode of HIV transmission and the lack of effective treatment of AIDS are in themselves ineffectual deterrents, as individuals may not be sufficiently risk averse to consider the dangers of unprotected sex as deterrents. Sexual behaviour in the time of HIV/AIDS is decision-taking under uncertainty, and the willingness to take risks (the "utility function") remains high (clouded as the rationale may be at times by sexual desires, alcohol or drug use). Alternatively, knowledge about the odds for infection and dependency on health and nutrition may be vague and not easily acted upon.<sup>11</sup> Additionally condoms that could make sexual engagements safer may not be easily available or be seen to be costly, or be target of aversion. The situation in rural areas is found to be more negative, partly because information campaigns have particularly been targeting urban people through urban languages and images, and partly because the outreach of campaigns has been geographically limited. Lesser access to advertising media (TV, newspapers, billboards, radio) reduces the effectiveness of information dissemination in rural areas. Poor rural people away from the city centre are not easily reached by social messages of this type.

#### **1.4. ABILITY TO WITHSTAND THE INFECTION – AN AGRICULTURAL VIEW**

Once the HIV (virus) has entered the human body, there are no known methods of eliminating it<sup>12</sup>. What can be influenced is the period of time it takes for the HIV-positive patient to develop full-blown AIDS, when the patient succumbs to opportunistic infections or cancers and inevitably dies. Unfortunately HIV can only be diagnosed using special test kits. Whilst not expensive, testing is often beyond the physical and monetary reach of poor rural dwellers. HIV infections therefore largely remain undiagnosed until AIDS develops. An HIV-infected person may very likely be unaware of being HIV-positive and therefore considers steps to mitigate the development of HIV to AIDS as irrelevant. Only extensive testing programs, with access to counselling services and follow-up programs can overcome such ignorance. Needless to say they have so far mostly been out of reach of rural people. The cultural sensitivities of HIV testing are immense, and the personal implications for an HIV-positive individual fundamental. From the view of an individual the absence of

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<sup>11</sup> We know little about the degree of risk aversion or risk loving in relation to HIV transmission. Although such utility (or welfare) functions may vary among individuals, it is conceivable that a 1:500 – 1:1000 risk may be considered too small to act upon (re: willingness in some circles to play Russian roulette with a six-shooter), or that risks are irrelevant for people who are already HIV positive or think they may be so. Macho-cultures often associated with some professions further complicate the analysis.

<sup>12</sup> Genetic immunity to HIV infections, and sporadic reports of complete cleansing by ARD, remain to be verified, and have not been observed outside very isolated cases. (See also Footnote 2.)

supporting mechanisms may discourage HIV testing altogether. This is, in effect, the normal course of events in rural SSA, and therefore fuels HIV transmissions.

Modern anti-retroviral drugs have been shown to prolong the period before outbreak of AIDS very significantly, and possibly – in conjunction with other remedial efforts - to allow for normal life expectancy (see e.g. Siika, 2005). However, although the HIV-load in the patient's body may remain low, he or she remains infectious. In order not to act as a long-term reservoir for additional HIV infections the patient must refrain from actions that could lead to HIV transmission, including unsafe sex. Whilst the price of ART is easily within reach of average salaries in rich nations, it is much beyond the purchasing powers of poor rural people, even when available as generic versions of the component drugs<sup>13</sup>. There are normally no health insurance schemes available at reasonable costs for poor rural people (McDonagh, 2001). The increasing commercialization of health care and medical insurance in many SSA countries further adds to the current irrelevance of modern HIV/AIDS drug treatments for poor rural people. However, the relative success of international ARV campaigns offering free or low-cost medicines must be noted. Although falling short of the original target of 3 million people receiving ART by 2005, the 1.5 million doing so represents a sizeable group. Few of these, however, appear to reside in rural communities. There are no verified traditional or herbal medicines or witchcraft available to eradicate an HIV infection in a patient.

Non-(ARD) drug interventions can also – alone or in combination with ART – prolong the period between HIV infection and full-blown AIDS. There are two strategies of relevance to rural people, and they can best be combined. The first strategy is to attempt to eliminate from the patient's body other unrelated diseases: in particular malaria, parasite infections, STDs and common infectious diseases. The treatment of such diseases, whilst not cheap for a poor rural patient, is a very small fraction of ART. The second strategy is to boost the patient's nutritional level, by increasing the intake of proteins, carbohydrates, essential minerals (especially iron and zinc) and critical vitamins (Vitamin A is of particular importance to the immune system). In order to prevent sub-optimal functioning of the gut, safe clean water should be available, as (re)infections by a large number of waterborne diseases otherwise become inevitable (Stillwaggon, 2005; Siika et al., 2005). As part of this nutritional strategy there should be avoidance of known immune system depressants, e.g. aflatoxins and other mycotoxins often present in low quality or poorly stored groundnuts and cereals (maize in particular). The second strategy is expensive compared to ART, but will clearly strain the budget of a poor rural family. The second strategy also raises issues of availability and distribution at household level.

The combination of improved nutrition, clean water and (periodic) elimination of common diseases and infections, have significant chances of prolonging the period from initial HIV infection until the outbreak of AIDS. It is absolutely no cure but can improve life expectancy and life quality during the HIV phase. Until the price of effective ART comes down to minimal levels, the above constitutes the best low-cost avenue available for poor rural people who have or suspect they may have HIV.

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<sup>13</sup> There have recently been reports of AVD resistance in some HIV strains.

A special case exists in mother-to-child infections. An HIV-positive mother has a relatively high chance of infecting her foetus as the virus can travel across the placenta. Drugs are available to reduce this chance of transmission, although it cannot be eliminated. Normally beyond the purchasing power of poor rural people these drugs have been provided by governments and NGOs at a limited cost or for free<sup>14</sup>. Although evidence remains scarce it is conceivable that good nutrition and the elimination of other infectious diseases in the mother during all stages of the pregnancy may reduce the chances of placental transmission<sup>15</sup>. Children born with HIV relatively quickly succumb to AIDS-related diseases. Breast-feeding by an HIV-positive mother of an HIV-negative baby carries a significant risk of transmission through mother's milk. Ideally the use of a properly prepared mother's milk substitute will eliminate this risk, although – as is well known – there are significant other infection and under- and malnutrition risks involved when relying on milk substitutes under rural, often less than hygienic, conditions. There are also economic costs involved. For an HIV-positive mother to have a child involves very significant health risks for the baby. Combined, the chances of producing a 2-year old, HIV-free child under such circumstances have been estimated to be less than 50%. Experience from SSA suggests that many rural families – possibly more accustomed to regular high infant and child mortality than in rich countries – take these risks. The consequences of not having (more) children may also be immense, for the farm and future food production, for old age, and for social reasons.

## **2. HIV/AIDS AND FARMING SYSTEMS**

### **2.1. FARMING SYSTEMS IN THE TIME OF HIV/AIDS**

As long as a person in a farming family is solely HIV-positive, before the outbreak of AIDS, her or his labour productivity is largely unaffected. However, if simultaneously treated with AVD, secondary treatment effects may reduce the productivity. Food intake may deliberately be increased, creating a strain on the family economy. The amelioration of nutrient deficiencies and the treatment of ordinary infections may in the longer term result in temporarily better health. Left untreated the period of unchanged health status is normally short, from a few months to a very few years. When a positive HIV status becomes known the family may mobilize resources originally intended for agricultural production to buy medical services, whether conventional or traditional. Typically this involves the sale of agricultural assets: land, livestock, agricultural equipment, trees, and food in storage. These coping mechanisms are common in agricultural production systems in sub-Saharan Africa. Assets are further mobilized at the time of outbreak of full-blown AIDS to buy medicines (whether conventional or traditional), care, and ultimately for funeral arrangements. Poor farming families suffer significant to severe loss of assets, many of which flow out of the local community. Some consolidation of land holdings may take place, normally strengthening the hand of larger or absentee landowners (e.g. Chopra, 2004, Drimie and Mullins, 2005). The often weak legal position of a widow

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<sup>14</sup> The issue was the subject of intense political debate in South Africa some years ago.

<sup>15</sup> Unfortunately some of these treatments may in themselves pose risks to the unborn child.

in respect to land ownership and farm resources and assets, and access to collaterals for credits, also affects her children.

It has commonly been assumed that with the onset of AIDS in a family member – normally of productive age, and often a central power figure in the household – labour availability for farming is significantly reduced. Resulting from this it has been postulated, and sometimes observed, that the farming systems may gradually change allowing for less labour-intensive practices. “Tuberization of agriculture” is a term often used to describe this perceived change, assuming a gradual shift from high-intensity cultivation practices (cash crops, vegetables, large livestock) to more easily cultivated crops such as cassava, yams, sweet potatoes, and small livestock (poultry, rabbits). Following from this may be a shift away from protein-rich foods and varied diets to more starchy, carbohydrate-rich foods of lower nutritional value. There is little doubt that this change is taking place in some families and in some areas, and that the control of large livestock may fall into fewer hands. Careful monitoring of farming systems in Malawi, Ethiopia, South Africa and Uganda (e.g. Drimie and Mullins, 2005; Bishop-Sambrook et al., 2005; Chopra, 2004; Maina et al., 2005) nevertheless reveals that labour input to agriculture in many cases is not significantly changed, and that existing farming systems remain. Reduction in cash crops may at this stage equally reflect changes in agricultural economies, reduced market access and lack of competitive edge in changing national and global economies. However, there appears to be a tendency for children to be withdrawn from schooling, partly because school fees etc. cannot be met by income or dwindling assets, and partly because their labour is required on the farm. So, whilst maintaining the labour pool on the farm, school attendance may be reduced. Reports available indicate that both boys and girls are withdrawn from schooling; with the more limited attendance of girls to higher classes than boys, girls may, as a group, be more negatively affected in their school careers than boys. Some schools have responded by rearranging the school day so as to allow children more time for farm work without necessarily having to withdraw from lessons. Girls who are forced to abandon schooling may be more easily subject to sexual pressure. Higher school fees may thus hit girls particularly strongly. Teacher misuse of girl pupils has been widely reported.

With loss of assets mechanization of farms suffers. The productivity of smallholder farms in SSA is traditionally low, and although labour costs may be low compared to industrialized country agriculture, they are nevertheless significant in terms of per unit output. Many attempts have been made to mechanize African farms, from the introduction of animal draught power, handheld weed control spraying equipment, milking machines to tractors and combine harvesters. Whilst it could be argued that decreasing adult labour availability in farming is an opportune moment for mechanized cultivation, chemical weed and pest control, and machine harvesting of crops, the weakening of assets and skilled labour weigh against such plans (Swaans et al., 2005). Modifications in agricultural technology have often been limited to advocacy of lighter tools more suitable for physically smaller, older or less muscular women, on the assumption that men more often than women fell victim to AIDS. This assumption seems no longer to hold true.

It has also been observed that with the increasing tendency for both parents to succumb to AIDS-related diseases, the teaching roles of parents to their children on agricultural practices are endangered. Orphans often fall back on grandparents or

older, more distant relatives whose agricultural knowledge and techniques may be a generation old. Originally thought to create a major breach in the knowledge chain, it is now less certain whether agricultural knowledge is actually lost in AIDS-hit families. Rather, it has been observed, the fact that children are transformed from farm labourers to farm managers as a result of parental deaths may in itself create problems not directly associated with knowledge gaps. Extended families often also offer help and advice to young farmers. Whatever the merit of the knowledge gap theory, it has led to reconsideration of school curricula in some regions of SSA, incorporating more agriculture to compensate for any generational shortfall at home. Kenya, Uganda and Tanzania are known to have experimented with this. This educational adjustment may in any case be advantageous for rural youths.

Of serious concern when the land owner (normally the father) dies, is future ownership of the farm and the land. Private ownership, including control of land and resources, when applicable, is often not automatically transferred to the surviving spouse, particular if it is the wife. There is a strong gender bias against women owning land in many communities in SSA. Instead the land may be passed on to relatives in the male line, confiscating – without compensation – the most valuable family asset. This may also apply to other assets, e.g. livestock herds, often considered male property, or to communal grazing rights. Normally less affected are rights to extract or collect water, and the collection of firewood and similar natural resources. Small livestock, including goats, rabbits and poultry, are often similarly unaffected and may remain with the surviving wife, offering good sources of protein and other nutrients for the family. Attempts to establish personal ownership rights, advocated by some (also in Norway, e.g. in a de Soto model), and associated inheritance or land transfer laws, may seem an attractive way of also ensuring female land ownership and establish collateral for farm loans and credits. Against this movement towards private ownership rights, which may prove particularly beneficial for women, must be seen the potential undermining of traditional communal safety nets. Some of these may be less visible to the outside eye and may contain cultural traditions of significant value. In polygamous families the complications may be even greater.

In some cultures the death of a husband incurs matrimonial duties on his brothers or other male family members for the widow. Although the AIDS scare has been reported to have weakened this tradition in relevant communities in SSA, it may still survive. The possibilities of HIV transmission increase with such traditions if care is not taken. If HIV-infection is suspected or a death is assumed due to AIDS, communities may be more or less tolerant to victims or their relatives. There are frequent reports of social isolation, although other communities may be including and supportive. Costs of traditional funerals may be very high and strip families of remaining assets, thus reducing sharply family safety nets traditionally constructed for such events. There are reports of burial rituals being simplified, and thus less costly, as a result of the current high death rates in some regions outstripping the ability or willingness to pay for traditional funeral arrangements. Assets held in reserve for illness and death by farming communities may be more or less vulnerable for AIDS impacts, and some farming systems are more vulnerable and less resilient than others. Livestock systems normally have a higher level of easily available capital assets (sell, slaughter animals, and herds may be rebuilt again over time) than crop-based systems (where the sale of harvests may create immediate starvation, and the sale of land be

irreversible). The availability of collaterals for bridging loans and credits may be a critical factor for raising funds for welfare functions associated with AIDS, and societies vary in credit policies in relation to AIDS issues. The ILO has discussed some of these credit and farming systems issues in a major paper on microfinance and HIV/AIDS (McDonagh, 2001).

Early anecdotal reports on the relationship between HIV/AIDS and farming systems suggested major changes in cropping systems due to ‘tuberization’: a move from labour-intensive cash crops to easily cultivated staples; and with an associated switch from protein-rich crops to carbohydrate-rich crops. In the livestock sector it was assumed that the loss of men would lead to reductions in cattle herds and a switch to smaller livestock, e.g. goats, sheep and poultry, and more women-headed households. There is little hard evidence that such changes have been part of general trends. There have been major market fluctuations in recent years in some African cash crops (e.g. coffee and tea), generally with downward prices, which in themselves may explain significant parts of the downturn in marketed produce. Cocoa production has been severely hit by political instability in West Africa. South African agricultural produce has gained global market shares (wines, fruits) in spite of a severe AIDS epidemic. The picture is not clear, and evidence of both decline and stability in farming systems can be found. There is evidence of prospering agricultural industries in AIDS-hit areas (export vegetables and cut flowers from Kenya and Zimbabwe) together with project failures or uncertainties (soya beans in Mozambique), under differing political frameworks. Early gender issues – more men dying than women – may have become reversed in some areas in recent years, where younger women seem particularly prone to infection and death. There is really only one general trend that is reasonably clear: the primary rural industries in general, and agriculture in particular, are becoming increasingly unprofitable, particularly for poor people who cannot invest in modernization of their enterprises, including diversification. We may see a trend towards more simple farming systems, with the inherent dangers of malnutrition arising from this. But the evidence is as yet not clear.

### **3. GOVERNMENT RESPONSES TO AGRICULTURE AND HIV/AIDS**

#### **3.1. FROM NEGLECT TO AWARENESS TO IGNORANCE**

The fact that HIV in sub-Saharan Africa is overwhelmingly transmitted in heterosexual relationships, and often with origins in extramarital relations, clouded the HIV/AIDS issue in African public debate for the first critical 20 years of the pandemic. Cultural and religious taboos and unwillingness to face the HIV issue squarely during the period when infection rates were low, have arguably killed many millions of Africans, with millions of HIV-positives probably succumbing to AIDS-related diseases over the next decades. The tragic neglect by African governments and the lack of a free debate in the African media on HIV/AIDS issues prior to the late 1990s may be seen as a blatant example of central authorities failing the individual citizens and their local communities. Although occasional awareness campaigns sprung up in the wake of the death of a son of a president or of a beloved pop singer, HIV/AIDS was often considered a medical issue. It was dealt with by grossly inefficient health systems. Medical use of condoms (do you mean “medical

recommendations to use condoms”?) became a highly confused debating point both within Christian and Muslim communities. In that sense current South African President Thabo Mbeki’s infamous statement of AIDS resulting from poverty, not a virus, was inadvertently useful for another approach to HIV/AIDS policies (that it was most unhelpful (and scientifically irresponsible) in other contexts remains).

Whatever minimal attention given to HIV/AIDS by African governments during the 1980s and 90s, not much encouragement was given by major international donors and credit institutions towards approaching the impending pandemic in a structural way. Abandoning the countryside as an investment target and favouring economic growth policies and structural adjustment measures from which primary rural industries at best would benefit through a postulated trickle-down effect, meant absconding from responsibility. There was knowledge available, not the least in national and international NGOs that could have framed investment thinking. The Federation (earlier: League) of Red Cross and Red Crescent Societies had understood the relationship between rural behaviour, rural-urban migration, and extramarital heterosexual relations in the mid-1980s and primed national societies with this knowledge. OXFAM and CARE were also early advocates of much more integrated approaches to HIV transmission in rural areas in SSA. Even medical agencies, e.g. Médecins sans Frontières, saw much beyond medical issues. The early confused turf disputes within and between WHO and UNAIDS in the 1990s were not helpful. Only in the mid- to late 1990s did alternative views on HIV transmission and the epidemiology of AIDS find growing institutional acceptance in development organizations like The World Bank, FAO and CGIAR - often through the perseverance of a few individuals. The gradual change of the development nexus from economic growth to poverty alleviation (reduction, eradication – terminologies differ) has over the last 5 years not only had to realize that the majority and the poorest of the poor people of sub-Saharan Africa live in the countryside and have their lives interwoven with agriculture, but also that the welfare gradient between the have’s and the have-not’s is in itself a conduit for HIV transmission. With HIV infection rates into double figures in many SSA countries it is now essential **to see agriculture through an HIV/AIDS lens** (Loevinsohn and Gillespie, 2003).

### **3.2. GOVERNMENT RESPONSES TO HIV/AIDS AND AGRICULTURE – A SAMPLE OF PRSPS**

There has been a gradual shift in general national development policies in SSA countries. The obvious place to look for policy changes is in the national Poverty Reduction Strategy Papers (PRSPs), imposed as conditions for loans and grants from The World Bank, and also subscribed to by many international development agencies and bilateral donors (including Norway). Whilst the formats (and possibly the content) of PRSPs to some extent are influenced by World Bank thinking, they remain the product of national compilation and therefore should reflect national priorities<sup>16</sup>.

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<sup>16</sup> Personal experience nevertheless indicates that external (often expatriate) consultants have been tasked with PRSP drafting. At least in one case it was only heavy insistence from one group of external consultants that in the end persuaded the government of a very heavily HIV-infected country to mention ‘HIV/AIDS and agriculture’ in their PRSP. The primary rural industries themselves have been notoriously neglected as development targets in many SSA PRSPs – but that may be another issue.

Kenya's PRSP (2005) has several mentions of a multi-sectoral national strategy in the fight against HIV/AIDS. The Kenyan "government plans to pay particular attention to the empowerment and protection of the most vulnerable. The government recognizes that vulnerability factors for HIV infection, including those related to poverty, gender, discrimination, educational attainment and socio-economic factors, are diverse and complex and can only be coherently addressed when the multi-sectoral dimensions of the response to HIV/AIDS are significantly strengthened" (p. 53). There is clearly a new awareness reflected in Kenya's recent PRSP 2005, although the simple approach of "agriculture through an HIV/AIDS lens" has not been adopted. There appears to be no direct links between e.g. agricultural production and agricultural extension. There is an inherent danger of actions falling victim to bewildering multi-sectoral approaches, and Winnie-the-Pooh (=everything now) philosophies.

Malawi's PRSP (2002), on the other hand, displays a profound understanding of the relationships between the agricultural sector and HIV/AIDS, and humility to search for more knowledge in complex production systems and rural life. It stresses the need for more active extension services, public and NGO-led, to intensify knowledge transfer of HIV/AIDS in Malawian agricultural communities. It discusses in detail nutritional issues. Notably it states directly: "Women in poverty can be forced to enter into high risk sexual relationships in bartering sex for subsistence" (p.86). Malawi's PRSP reflects current understanding of the HIV/AIDS issues and has a clear "agriculture through an HIV/AIDS lens".

In contrast, Mozambique's PRSP (2001) has not incorporated to any extent an HIV/AIDS lens in its description of the primary rural industries, Mozambique's economic backbone. It is essentially a focus on the improvement of health and welfare facilities. It reflects a narrow, medical-oriented view of HIV/AIDS, and the government's concern with the effects of the infection rate on overall economic performance. Published in 2001, it has obviously missed the conceptual developments that have emerged during the last 5-10 years on the HIV/AIDS issues, and appears in need of an urgent update if policies developed along PRSP lines are to prove relevant for Mozambique's rural population.

Tanzania's PRSP (2001) was published during the same year as Mozambique's. Although with a surprisingly limited coverage of both agriculture and HIV/AIDS for a country that is largely agricultural and overwhelmingly rural, there are brief references to the relationship between agriculture and HIV/AIDS amongst health-oriented considerations. As with Mozambique's PRSP medical and educational issues dominate, neither of which have proven particularly effective in the fight against HIV and aids-related diseases. Tanzania's PRSP reflects past perceptions and is in need of an update to be of significant help in tackling structural problems at the root of the HIV/AIDS epidemic.

Uganda's PRSP is very recent (2005) and could have been expected to reflect current knowledge, but falls woefully short on structural thinking. Abstinence, condoms and drug treatment dominate in the considerations of HIV/AIDS, although empowerment of women to determine their own sexual activities is mentioned (p. 196). It is particularly disturbing that the Uganda government in the PRSP appears so oblivious to much advanced work done on HIV/AIDS at structural and community level by NGOs and its universities in rural Uganda. The Uganda PRSP is a particularly



worrying example of an apparent government inability for lateral thinking, and a denial of structural issues.

Contrasting with this, another country with a high infection rate, Zambia, published its PRSP in 2002, portraying thorough understanding of structural issues. Throughout this PRSP there are frequent references to the two-way links between economic activities, poverty and HIV transmission, exemplified in its concept of “the tripod of barriers” (p.28) and the recommendations for rural development (e.g. p. 49, 56, 78). More than in any of the above examples, the Zambian PRSP reflects a sociological understanding of what the driving forces for transmission are in a country evenly balanced between rural and urban populations (e.g. p.108). Emphasis is also put on education and public awareness campaigns, and whilst disappointments have been noted in recent years on the efficacies of these, the Zambia PRSP reflects broad and thoughtful strategies to combat the pandemic. From a farming point of view the discussion on the contribution of the failures of earlier government policies in the agricultural sector, and in particular the dwindling access for farmers to agro-services in the wake of structural adjustment (p. 56), raises interesting points not covered by other PRSPs.

In the 6 PRSPs for countries in Eastern and Southern Africa (Norway’s main region of interest) sampled for this report, Zambia (2002) and Malawi (2005) (page 21 mentions the year 2002) reflect current thinking on structural relationships between agriculture and HIV/AIDS. The governments of Kenya (2005), Mozambique (2001), Tanzania (2001) and Uganda (2005) have produced PRSPs that are disturbingly void of structural analysis in respect to HIV/AIDS. As it is well known that both NGOs and universities in these and neighbouring countries have much better insight into these issues, it is disappointing that these governments, in their PRSP reports to bilateral and multilateral cooperating agencies, as well as in their own national policies, fail to raise issues that now appear so closely connected to the dynamics of HIV transmission.

## **4. CENTRAL ISSUES FOR DEVELOPMENT AGENCIES ON RELATIONSHIPS BETWEEN AGRICULTURE AND HIV/AIDS**

### **4.1. FIRST THINGS FIRST: AVOID GETTING INFECTED**

Unlike most other fatal diseases an HIV-infection in present day sub-Saharan Africa is most likely the result of a personal choice, albeit a choice made under strong social or economic pressure, or even physical threats from family or “friends”<sup>17</sup>. Consideration of sexual HIV-transmission is therefore a classic case for so-called Game Theory<sup>18</sup>. To have sex voluntarily is an action open to decision-taking under uncertainty, including consideration of the probability of becoming HIV-infected as a

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<sup>17</sup> Exceptions are HIV transmissions during medical treatment and (partially) mother-to-child infections. And rape. Transactional sex may originate from strong social pressure not easily resisted by a young girl.

<sup>18</sup> Game theory is now widely used in economics and econometrics to investigate the possible outcomes of rational decision-taking under uncertainty. In recent years a series of Nobel memorial prizes in economics have been won by economists who have developed and used game theory in their models.

result. The willingness to take a risk (the utility or welfare function) varies between individuals. Some are risk-loving, others are risk-averse. An inherently risk-averse individual may behave in a risky way if situations change. A starving person may decide to barter sex (for herself and her family) for food, a mother or sister to cover school fees for a child through sex, to get better grades at school by having sex with a teacher, being love-struck and wanting sex with a beloved, being intoxicated and oblivious of risk, wanting to have a baby, or succumbing to social pressure from family, friends, traditions. Women are particularly prone to dangerous situations as their power to resist social pressure may be limited. There are many reasons why taking risks are part of normal life. The risks can furthermore be reduced by ensuring that the sex partner is tested and HIV-negative (a small risk remains), that a condom is used (a small risk remains), that oneself does not suffer from a venereal disease or has an immune system deficiency (for whatever reason). Starting to have sex early in life may well increase the likelihood of many sexual encounters with more partners, but an early marriage with a faithful partner reduces chances of infection. The actual willingness of an individual to take an HIV risk may thus range from 1 (don't care) to 0 (celibacy or all possible precautions). The normal transmission rate of HIV is 1:500 – 1:1000 but this is probably not known by most people and does not enter into their risk considerations. In 2005 very many people in sub-Saharan Africa will be aware that HIV/AIDS is transmitted by sexual intercourse, very few will be able to assess the risk of infection. Very many are willing, or are forced, to take whatever the perceived risk is (Bryceson and Fonesca, 2005).

Since most HIV transmissions in SSA are linked to heterosexual intercourse, complete abstinence (celibacy) would – in theory – minimize transmission risks. Active heterosexual practices (and homosexual activities particularly among men), with frequent sex and changing multiple partners, maximize transmission risks<sup>19</sup>. An obvious and largely financially cost-free strategy to avoid HIV infection by the individual is to minimize sexual encounters. Settings where individuals are able to do this, alternatively to absolutely ensure that sex partners are similarly HIV-free, offer high probability of avoiding HIV infections. It is therefore obvious that there are proponents of abstinence, both in religious communities and in sections of the medical community. Zero risk = zero HIV.

For organizations to be able to assist sexually active people in setting priorities for their sexual behaviour, the game theory suggests:

1. making people aware of what the chances of infection are
2. making people aware of what the consequences of infection are
3. supporting people to be risk averse, including supporting actions that strengthen the rationale for being risk averse and reduce the need or inclination to be risk loving.

These 3 actions are universal in nature. Actions 1 and 2 are matters of information dissemination or campaigns; they apply equally in all settings in society. Where appropriate they can also take place in agricultural settings but they are not unique to agriculture. In an agricultural setting, Action 3 takes somewhat different forms from

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<sup>19</sup> Infected needles used in drug addiction is an additional common infection route, but not of statistically major importance in SSA.

related actions in urban or non-agricultural environments. In the following text actions specifically targeted at agricultural communities are outlined.

#### **4.2. INFORMING ABOUT CHANCES OF HIV INFECTION**

General levels of information and conduits of information are normally less developed in the countryside in sub-Saharan Africa than in urban areas. School attendance is lower, logistics of information dissemination inferior including newspapers, television and possibly radio. Developed from the original model of Farmer Field Schools (conceived for plant protection and agronomic training by the International Rice Research Institute (IRRI) in the Philippines and later developed with much success by FAO, also in Africa), Farmers' Life Schools have been initiated in Eastern and Southern Africa to form fora for information dissemination and information capture (two-way). Not limited to information on chances and pathways of infection but linking this to disease information, coping mechanisms and initiatives to reduce the chances of risky behaviour (Actions 2 and 3 above), Farmers Life Schools constitute one agriculture-based model that offers promise in rural areas. Many NGOs have adopted similar models, under a variety of names and acronyms, particularly as singular educational efforts in schools or in the media. Unrelated to other local community actions, these approaches do not seem to have significantly stemmed infection rates. Simple educational or information campaigns have been deemed unsuccessful by many observers in Eastern and Southern Africa. This should not be misconstrued as to advocating that news media or educational establishments should not mention HIV/AIDS, but as stand-alone efforts they do not seem to be very effective. People continue to engage in risky sexual behaviour, and on a very large scale. Condom campaigns are part of awareness of risk-reducing strategies; early evidence indicates that the effect of such campaigns (whether condoms are free or not) for a large variety of reasons is at best moderate in rural societies.

#### **4.3. MAKING PEOPLE UNDERSTAND THE CONSEQUENCES OF HIV INFECTIONS: AIDS**

Ignorance, or unwillingness to comprehend the links between HIV-infection and AIDS-induced diseases, still exists. Political, cultural or irrational reasons persuade some to disregard this link. It is important that these highly dangerous misconceptions are dealt with, even if it involves openly contradicting the highest circles in the land or church, and even if said by expatriate consultants. Diplomacy sometimes works better than confrontation. The essential aspect of AIDS, particularly for people living in impoverished rural conditions without ensured access to anti-retroviral medication, is that the condition is inevitably fatal, and that the decline is fast. Whilst improved nutrition arising from diversified food production can prolong the period of quality life, AIDS-related infections or cancers will inevitably kill both rural and urban patients. An AIDS-death goes beyond the individual. The social consequences are enormous, and severe also in rural farming communities. The production system (the farm) is endangered and may pass out of the family, social safety nets may be severely strained, maintenance of communal installations (e.g. wells, terraces, watercourses, fences against wild animals, communal herding) may become impossible. To understand the ultimate consequences of HIV infections in a rural

community is a real lesson in updating one's utility (or welfare) function for decision-taking under uncertainty. The more certainty about risk, less risk may be taken. Farmers' Life Schools, and similar mechanisms for outreach in rural communities, offer one mode of achieving this.

#### **4.4. SUPPORTING PEOPLE TO AVOID HIV/AIDS RISKS – RURAL REALITIES**

Willingness to take risks – to give priority to other aspects in life than one's own health – is central to HIV transmission. With the realities of a major part of HIV infections in sub-Saharan Africa now arising from transactional sex (driven by poverty to bartering for food, fertilizers, seeds, money or general services by offering sexual services), a first line of approaching the problem is to reduce the need to consider transactional sex as a solution to poverty issues. This is a huge envelope, ranging from the need to switch government policies and international cooperation and assistance to the primary rural industries and development of the countryside, through issues of structural adjustment (which has deprived rural people of their free or low-cost institutions for e.g. agricultural extension, research, veterinary services and raised the cost of schooling and medical care), through thorny WTO decisions on global agricultural trade and the financing of services. As the WTO rounds recently illustrated (Dec 2005) the willingness of rich countries to favour poor countries and their impoverished rural people and their agriculture is far from obvious. There is every reason to believe the World governments will default on many of the Millennium Development Goals, including the halving of food insecurity by 2015. Ultimately it will not have major impact on HIV-transmission to encourage celibacy and faithfulness or distribute very large quantities of condoms unless the major economic distortions between the countryside poor and the city rich are tackled, and the imbalances within rural communities lessened. To assist women – particularly the young – not to have to engage in transactional sex is probably the greatest contribution any development agency – national or international – can make. To enable women to seek income in ways that do not carry an HIV risk is also part of a wider issue of empowerment of women. It includes girl's education (which often leads to older sexual debuts), ability to stand up to traditional and culture-dependent sexual exploitation by relatives, enabling mechanisms that strongly discourage male macho behaviour, and an ability of women to control and insist on the use of condoms when engaging in otherwise unsafe sex.

The economically perilous state of agriculture of smallholder farmers may now be the greatest causal factor in the transmission of HIV. High cost of inputs (fertilizers, seeds), the inefficiencies of commodity markets at local and national level, the lack of input subsidies and guaranteed and fair produce prices all contribute to families seeking high-risk routes to meeting daily needs. As the natural resource base degrades in many parts of SSA as a result of growing human populations, the need for the development and initial financing of ultimately sustainable farming systems has become overwhelming.

Whilst SSA smallholder production suffers badly from the absence of efficient and fair marketplaces, the establishment of such markets also constitutes a breeding

ground for transactional sex and for commercial prostitution, with heightened HIV transmission risks associated.

Associated with poverty differentials is the growing tendency for seasonal labour migration, as the countryside cannot provide adequate all-year income. The road to seasonal cash incomes is paved with high risks of HIV-infections, as distance and the absence from traditional social norms increases. Government policies or those of aid agencies that enable or encourage seasonal migration between rural and urban areas should be viewed with caution.

Agricultural extension workers were in the early phases of the pandemic portrayed as conduits of HIV, as they travelled widely in rural communities. It is true that agricultural extension systems have become greatly reduced in many SSA countries as a result of structural adjustment. Agricultural extension workers could in principle assist in information gathering and advice. Emerging out of a myriad of experiences, experiments and observations are a notion of community groups handling the issues of rural poverty and risk taking on a community basis. Farmers' Life Schools (and similar institutions) may be a promising mechanism for information dissemination and information gathering. Such community efforts also carry the seeds of new types of social and financial safety nets being created to reduce HIV risks. In the seminal ILO-paper "Microfinance – strategies for HIV/AIDS mitigation and prevention in sub-Saharan Africa" McDonagh (2001) outlines many microfinancing tools that can be applied to reduce the need for high risk behaviour. The solidarity basis of small-loan rural financing institutions address directly issues that are closely related to transactional sex, prostitution and labour migration. In industrialized societies risks are often mitigated by insurances: medical insurance, crop insurance, livestock insurance, household insurance, and pensions. Poor rural societies in SSA do not at present have access to reasonably priced insurance services that could mitigate risks. There may be good arguments for mobilizing insurance schemes that can reduce risks of individuals, households and enterprises in rural SSA, whether run by governments or private industry, or by microfinancing schemes.

In their efforts to reduce the need for risky behaviour and to strengthen the nutritional status of uninfected and infected members of rural communities, several organizations have considered and experimented with food aid. The relationships between good nutritional status and the ability of the immune system to withstand or to tackle HIV infections are reasonably well known. Varied diets, with above-normal levels of proteins, carbohydrates, minerals (particularly iron and zinc) and adequate levels of vitamins (particularly Vitamin A) are helpful. Diverse farming systems can grow crops and produce livestock products that contribute to varied diets. School meals offer some help. Good, varied and clean food does help. Food aid exclusively based on one commodity (e.g. maize flour, groundnuts, vegetable oil) can be detrimental through its unintended effects on nutritional diversity. Aid organizations have shown little concern for the possibilities that food aid may contain aflatoxins, other mycotoxins or food preparation methods that could offer threats to the immune system of those receiving the support. Analytical methods are now available that can easily assist.

There is a large niche of efforts that can be used to reduce risky sexual behaviour in rural populations or lessen the need for seasonal rural-urban migration. Unless firmly

rooted in local communities they have limited chances of success. OXFAM, CARE and others have developed detailed guidelines for such community efforts, and reported on field efforts in Malawi, Mozambique and Uganda (e.g. Stewart, 2005, OXFAM n.d.).

It has been suggested that modifications in farming systems, including the adaptation of mechanical tools, or tools specially designed for the physique of farming women and children, may ease the burden on remaining people to farm in the age of AIDS. Lighter hoes, tractorization, introduction of draught animals, extensive use of herbicides (to avoid mechanical weeding), insect resistant crops (developed by genetic engineering) and biofortification of staple crops (through genetic modification) are examples of technological fixes that may be relevant. The introduction of such tools may have local merits but they in no way attack the real structural problems of transmission of HIV. Relevant for risk reduction (through immune system fortification) can be the introduction of vegetable gardening or more extensive use of high-level protein, e.g. goat milk.

Finally, three legal issues: Firstly a few words on crimes against humanity and their relations to HIV/AIDS. Recent judgements in the Yugoslav Tribunal in The Hague have confirmed that systematic crimes of rape of women committed by military and para-military personnel at times of civil strife and wars, are crimes against humanity and can be severely punished. The Arusha Tribunal on the Civil War in Rwanda may likely reach similar conclusions as cases are developed there. This is a major breakthrough in international humanitarian law, and is in principle of relevance to a huge number of women who have been raped and HIV-infected as a consequence in the many instances of civil unrest in rural sub-Saharan Africa. However, the practical effect of these legal judgements for the women affected in sub-Saharan Africa is likely to be minimal, and compensation, if at all, small or too late. Military bands of soldiers committing rape and causing HIV-transmission are unlikely to be immediately deterred by judgements in distant The Hague or Arusha, but at least some principles, with suitably punitive deterrents have been established. The quest for peace also has HIV/AIDS implications.

Secondly, the Right to Food. Repeatedly advocated by Norwegian representatives to international for a as an international convention or law on the rights of individual citizens to food (unclear sentence. Words missing?), may supplement earlier paragraphs in the Universal Declaration of Human Rights, which underpins the establishment of the United Nations system. If such rights were or could be enforced and acted upon, transactional sex to secure food for a family could be eliminated. Similarly a legal right could be established for adequate nutrition, also at the time of HIV infections. As such rights may legally commit national governments to services for their citizens, some influential nationals, including the USA, have opposed them. The practical implications for HIV/AIDS victims in the short or medium term seem uncertain.

Thirdly, HIV/AIDS in the workplace. ILO and UNAIDS have both developed guidelines for the handling of HIV/AIDS victims in the workplace, including in agricultural enterprises. For agricultural research organizations the CGIAR system has guidelines. National legislation is also growing. The essence of all guidelines and

regulations has so far been to institute non-discriminatory policies, both in terms of employment conditions and medical insurance and pension benefits.

## **5. CONCLUSIONS**

The face of HIV/AIDS in sub-Saharan Africa has changed considerably since the first detection of AIDS-related diseases in East and Central Africa in the early 1980s. Many of the current myths and anecdotes reflect on the early years of the spread of HIV/AIDS and are much less relevant to the present situation of sub-Saharan Africa. Early notions of sexual promiscuity along the trade routes with lorry drivers and agricultural extension agents as main conduits of the disease have little relevance today. The most severely hit groups are no longer powerful city men and the intelligentsia. The urban-rural divide is less pronounced. Commercial prostitution is not the main transmission route, and labour migration is just one of many contributing factors. Young women are most at risk.

Early estimates of severe loss of labour from agricultural activities seem not to hold generally true. Loss of agricultural knowledge through orphans being taught farming by grandparents is less severe than originally thought. Tuberization of agriculture involving a switch from diverse farming systems, including cash crops, to labour-saving simple tuber crops with mainly carbohydrates, seems not to have taken place on a large scale. Substitution of cattle, herded by men, by goats herded by females, has only been limited. Large-scale land redistribution in the wake of dying landowners has not taken place.

What has taken place, and has caused the HIV-infection of many millions of Africans living south of the Sahara, is a massive neglect over the last 20-30 years of the smallholder agricultural sector, forcing rural people, and particularly younger women, into highly risky transactional sexual relations to raise money and food for themselves and their families. If the choice is between HIV/AIDS or starvation, HIV/AIDS or losing the farm, HIV/AIDS or no schooling for your children, many, if not most, who no longer have assets to sell, sell sex. At the foundation of HIV/AIDS transmission is risky behaviour originating in structural issues. To combat HIV transmission and thereby AIDS in rural areas (with the many links to the urban sector) requires a willingness to tackle the root causes of rural poverty. Most other actions, however well-meant and sometimes helpful to the individual or smaller groups, have little structural impact and will not help stem the pandemic. That is not to say they should not be undertaken, as all humanitarian assistance can be valuable, but they should not be allowed to mask the fundamental issues (see also Alumira et al., 2005, and Greenway and Mullins, 2005). Distributing condoms throughout the villages, getting young girls into education, combating STDs, malaria and intestinal worms, even running HIV/AIDS awareness campaigns are all honourable activities, but none of them will fundamentally stop the pandemic.

At no point should organizations, national, bilateral or multilateral, pretend that humanitarian actions can solve the HIV/AIDS issue. In the present day dire economic straits for African nations, including the non-resolution of global trade issues, it is most likely that structural changes will have to come at the local level, with local

community institutions taking responsibility for reducing risky behaviour through the further development, possibly with outside assistance, of locally conceived and adapted social safety nets. There are no obvious immediate technological fixes in agriculture to eliminate HIV transmission risks. Whilst we must attempt to resurrect quickly the primary rural industries of sub-Saharan Africa, we are also waiting for the vaccine or the superdrug. We must sympathise with the many rural and urban people who have been forced by circumstance to contract HIV/AIDS.



## REFERENCES<sup>20</sup>

Alison, E. and Seely, J. (2004) HIV and AIDS among Fisherfolk: A Threat to “Responsible Fisheries”? *Fish and Fisheries* 5, 215-234

Alumira, J.D., Bantilan, M.C.S. and Sihoma-Moyo, T. (2005) HIV/AIDS impact mitigation: Short-term humanitarian *versus* longer-term development interventions. Challenges for research. Int. Conf. on HIV/AIDS and Food and Nutrition Security. Durban, South Africa.

Bishop-Sambrook, C. *et al.* (4 other authors) (2005) The rural HIV/AIDS epidemic in Ethiopia and its implications for market-led agricultural development. Int. Conf. on HIV/AIDS and Food and Nutrition Security. Durban, South Africa.

Bryceson, D.F. and Fonseca, J. (2005) Risking Death for Survival: Peasant Responses to Hunger and HIV/AIDS in Malawi. Int. Conf. on HIV/AIDS and Food and Nutrition Security. Durban, South Africa.

Chapoto, A. and Jayne, T.S. (2005) Socio-economic characteristics of individuals afflicted by AIDS-related prime-age mortality in Zambia. Int. Conf. on HIV/AIDS and Food and Nutrition Security. Durban, South Africa.

Chopra, M. (2004) Food security, rural development and health equity in Southern Africa. EQUINET Discussion Paper 22. Univ. of Western Cape, South Africa

Corbett, E., Stekete, R. *et al.* (2002) HIV-1/AIDS and the control of other infectious diseases in Africa. *The Lancet* 359, 2177-2187

Dominguez, C., Jones, R. and Waterhouse, R. (2005) The impact of HIV/AIDS on seed security in southern Mozambique. Int. Conf. on HIV/AIDS and Food and Nutrition Security. Durban, South Africa.

Donovan, C. and Bailey, L. (2005) Understanding Rwandan Agricultural Households’ Strategies to Deal with Prime Age Illness and Death: A Propensity Score Matching Approach. Int. Conf. on HIV/AIDS and Food and Nutrition Security. Durban, South Africa.

Drimie, S. and Mullins, D. (2005) Mainstreaming HIV and AIDS into Livelihoods and Food Security Programmes. The Experience of CARE Malawi. Int. Conf. on HIV/AIDS and Food and Nutrition Security. Durban, South Africa.

Fisher, N.M., Munk, M. (2005) Poverty and Dependency as targeting Criteria for Farm input Distribution in a Rural Malawian Community affected by HIV/AIDS. Int. Conf. on HIV/AIDS and Food and Nutrition Security. Durban, South Africa.

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<sup>20</sup> Many of the references are in themselves review papers presented at the International Conference on HIV/AIDS and Food and Nutrition Security, Durban, South Africa, April 2005. Readers are advised to consult the review papers for further primary sources. The selection done in this reference list is to emphasize the views of scientists and others working in the field in sub-Saharan Africa to-day.

Greenway, K. and Mullins, D. (2005) The HIV/AIDS Timeline as a Program Tool: Experiences from CARE and C-SAFE. Int. Conf. on HIV/AIDS and Food and Nutrition Security. Durban, South Africa.

Hunter, L. and Twine, W. (2005) Adult Mortality, Natural Resources, and Food Security. Evidence from the Agincourt Field Site in Rural South Africa. Int. Conf. on HIV/AIDS and Food and Nutrition Security. Durban, South Africa.

Loevinsohn, M.E. and Gillespie, S. (2003) HIV/AIDS, Food Security and Rural Livelihoods: Understanding and Responding. IFPRI Discussion Paper 157, Washington DC

Loevinsohn, M.E. (2005) AIDS and watersheds: Understanding and assessing bio-structural interventions. Int. Conf. on HIV/AIDS and Food and Nutrition Security. Durban, South Africa.

Maina, G.W. et al. (3 other authors) (2005) Nutritional impact of the TITLE II feeding program targeting people living with and affected by HIV/AIDS in Uganda. Int. Conf. on HIV/AIDS and Food and Nutrition Security. Durban, South Africa.

McDonagh, A. (2001) Microfinance strategies for HIV/AIDS mitigation and prevention in sub-Saharan Africa. Social Finance Unit Working Paper 25. International Labour Organisation, Geneva, Switzerland.

Onyango, S.O. and Swallow, B. (2005) Effects of HIV/AIDS-related illness and deaths on agricultural production in the Nyando River basin of Western Kenya. Int. Conf. on HIV/AIDS and Food and Nutrition Security. Durban, South Africa.

OXFAM (not dated) Mitigating the impact of HIV/AIDS – mainstreaming in action. Malawi food crisis response. *For this and related OXFAM short papers used see [www.oxfam.org.uk](http://www.oxfam.org.uk)*

Seaman, J. and Petty, C (2005) Understanding the impact of HIV/AIDS on household economy. Int. Conf. on HIV/AIDS and Food and Nutrition Security. Durban, South Africa.

Senefeld, S. and Polsky, K. (2005) Chronically Ill Households, Food Security, and Coping Strategies in Rural Zimbabwe. Int. Conf. on HIV/AIDS and Food and Nutrition Security. Durban, South Africa.

Siika, A.M. et al. (9 other authors) (2005) AMPATH'S HAART 'N' HARVEST initiative: addressing the nutritional needs of HIV-infected patients on antiretroviral therapy. Int. Conf. on HIV/AIDS and Food and Nutrition Security. Durban, South Africa.

Stewart, J. (2005) Food for Assets Programming Through an HIV/AIDS Lens: C-SAFE's Experiences in Creating an HIV/AIDS Analysis Tool for Practitioners. Int. Conf. on HIV/AIDS and Food and Nutrition Security. Durban, South Africa.

Stillwaggon, E. (2005) *The Ecology of Poverty: Nutrition, Parasites, and the Vulnerability to HIV/AIDS*. Int. Conf. on HIV/AIDS and Food and Nutrition Security. Durban, South Africa.

Strasser, S. and Egge, K. (2005) *Measuring the Effect of Targeted Food Assistance on Beneficiaries with Chronic Illness: Lessons Learned from the Literature and the Field*. Int. Conf. On HIV/AIDS and Food and Nutrition Security. Durban, South Africa.

Swaans, K., Broerse, J.E.W and Bunders, J.F.G (2005) *Agricultural innovation in response to HIV/AIDS: a challenge for Integrated and interactive approaches*. Int. Conf. on HIV/AIDS and Food and Nutrition Security. Durban, South Africa.

Tumushabe, J. (2005) *HIV/AIDS and changing vulnerability to crisis in Tanzania: Implications for food security and poverty reduction*. Int. Conf. on HIV/AIDS and Food and Nutrition Security. Durban, South Africa.

World Bank (1997) *Confronting AIDS: Public Priorities in a Global Epidemic*. Oxford University Press, Oxford, U.K.

## **APPENDIX 1**

**Terms of Reference** (available only in Norwegian)

### **OPPDRAGSBESKRIVELSE UMB**

Norad ønsker å belyse sentrale sammenheng mellom utviklingen i landbrukssektoren i Afrika og HIV/AIDS gjennom en deskstudie. Formålet med studien er å etablere et faglig grunnlag for å utarbeide en tematisk brosjyre. Brosjyren vil presentere sentrale problemstillinger som setter saksbehandler innen bistandsadministrasjonen (offentlig og frivillig) og privat næringsliv i stand til å vurdere mulige positive og negative sammenhenger mellom landbruks og HIV/AIDS-programmer og tiltak i denne sammenheng.

Utkast til rapport vil bli presentert på et seminar i Norad med deltakelse relevante frivillige organisasjoner, forskningsinstitutter og næringslivet.

Arbeide vil basere seg på en gjennomgang av nasjonale og internasjonale rapporter og studier og skal inkludere, men er ikke begrenset til følgende problemstillinger;

- I hvilken grad er denne problemstillingen behandlet i overgripende policydokumenter som PRSP og sektorprogrammer (SWAPs) (dersom det foreligger slike studier, evt. ta for seg Malawi og Etiopia som case).
- Ernæringsmessige konsekvenser av landbrukspolitikk/programmer og situasjonen til HIV/AIDS (monokulturer, cash crops og tradisjonelle planter).
- Konsekvenser av HIV/AIDS (sykelighet og dødelighet) på lokale produksjonssystemer herunder overføring av tradisjonell kunnskap knyttet til landbruksproduksjon.
- Gender og HIV/AIDS, herunder rettigheter til jord og innsatsfaktorer.
- Erfaringer med landbrukets veiledningstjeneste og HIV/AIDS.
- Relasjoner mellom landbygda og byene når det gjelder familiemedlemmer med HIV/AIDS og implikasjoner for befolkningsstruktur og lokale produksjonssystemer.

Det vil også være relevant å trekke frem eksempler på programmer som forsterker et positivt samspill mellom landbruksprogrammer/policy og HIV/AIDS arbeidet, og herunder peke på kritiske faktorer i planlegging av programmer på landsbygda og implikasjoner for overordnet policyarbeid.

Rapporten skal ikke overstige 35 siden, med et vedlegg der et tekstmessig utkast til brosjyre presenteres (3 sider). UMB er ansvarlig for å organisere et seminar hvor rapporten og brosjyren presenteres. Materialet skal revideres med bakgrunn i de kommentarer som fremkommer på seminaret og skriftlig fra Norad. Det er satt av inntil 18 dager til utarbeidelse av rapporten og brosjyren og organisering av seminaret.

Oslo, 28.11.05