

Working Paper 2

Human capital and the HIV epidemic in sub-Saharan Africa

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ILO Programme on HIV/AIDS and the World of Work
Geneva, June 2002

Preface

The ILO's commitment to fighting HIV/AIDS in the workplace is founded on two important facts. First, the epidemic is concentrated in the working age population (15-49 years), and affects the world of work in many ways, resulting in reduction in labour supply and earnings, loss of valuable skills and experience, and decline in productivity and enterprise profits. Secondly, there is the capacity of the ILO to respond to the epidemic based on its tripartite structure, which makes it possible to mobilize governments, employers' and workers' organizations to take action against AIDS in the workplace. Hence, the mission of the global *ILO Programme on HIV/AIDS and the World of Work (ILO/AIDS)* is to raise awareness about the impact of the epidemic in the workplace, and to help build capacity of governments and the social partners to formulate and implement HIV/AIDS workplace policies and programmes based on the principles and guidelines contained in the *ILO code of practice on HIV/AIDS and the world of work*.

Research and policy analysis on HIV/AIDS issues in the world of work is an integral part of the work programme of ILO/AIDS. It serves as an important means to improve understanding of the economic and social impact of the epidemic, as well as providing a sound basis for advisory services and for planning and implementing technical cooperation projects – other key activities of ILO/AIDS.

The present working paper by Desmond Cohen concerns the impact of HIV/AIDS on human capital in sub-Saharan Africa. It provides insights into the impact of the epidemic on sustainable development in the region that is hardest hit by AIDS and already seriously affected by poverty, by focusing on key factors critical to human capital. The paper analyses the loss of human capital in two important social sectors – health and education – as a result of AIDS, and suggests how to respond to AIDS-related loss of skilled and professional labour mainly through mobilizing governments and workplace partners. In more practical terms, the paper concludes with a proposal for the maintenance of human capital in the form of a multisectoral programme of action.

We find this paper useful, in terms of approach, lessons and guidelines for further research and action programmes in this important area. We hope that others interested in and working on HIV/AIDS and human capital will similarly find it useful for their work, and we welcome feedback from readers.

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Contents

Page

Preface	
INTRODUCTION	1
I. GENERAL ANALYSIS: WHAT IS THE PROBLEM?	3
1. Heterogeneous labour: why this is important	3
2. The loss of workers with professional training and higher education	5
II. ASSESSING THE IMPACT OF LOSSES OF HUMAN CAPITAL ON THE PUBLIC SECTOR	7
1. Malawi: the HIV epidemic, human resources and the public sector	7
(i) The epidemiological situation	7
(ii) Measuring human resource attrition	8
(iii) Measuring and responding to impact	10
III. ASSESSING THE IMPACT OF LOSSES OF HUMAN CAPITAL IN TWO KEY DEVELOPMENT SECTORS	12
1. The critical roles of education and health	12
2. Reviewing the evidence	13
3. Education sector: recent trends in the balance of demand and supply	13
4. Responding to systemic impact	15
5. Health sector: the case of Botswana	18
IV. RESPONDING TO LOSSES OF HUMAN CAPITAL: MANAGING IMPACT AND MOBILIZING THE SOCIAL PARTNERS	21
1. The informal sector	21
2. Impacts on management performance	22
3. Impacts external to productive enterprises	23
4. Impacts on the labour market	23
5. The response from workers' organizations	24
6. The role of Ministries of Labour	24
V. CONCLUSIONS	26
Annex 1: proposal for a programme of action	28
Annex II: references	32

INTRODUCTION

Within the past few years concern has mounted about the impact of the HIV epidemic in sub-Saharan Africa on the achievement of sustainable development. This region now accounts for an increasing proportion of the world's poorest people, and living standards have generally fallen over the past two decades. Many of the social and economic indicators that are used to measure performance have actually regressed – in part as a result of the effects of HIV and AIDS on populations. The most telling general statistic relates to life expectancy, which is falling in many countries, such that a widening gap has emerged in comparison with the developed countries. UNAIDS estimates that life expectancy is now less than 40 years in Malawi, Botswana, Mozambique and Swaziland, while for the region as a whole it is 47 years compared with an estimated 66 in the absence of AIDS.¹

AIDS is believed to have killed 2.3 million Africans in 2001. There were an estimated 3.4 million new infections in 2001 and there are presently 28.1 million Africans living with the virus. It is now the case that several other countries in southern Africa have joined Botswana with HIV prevalence rates in excess of 30 per cent. Indeed within countries there are cities with even higher rates of HIV prevalence amongst adults and, while exceptional, there are some places with prevalence in excess of 50 per cent.

It is still the case that in most countries there are continuing urban/rural differentials in rates of HIV in the population, but even with lower rates of HIV, in terms of absolute numbers most of those infected are to be found amongst the rural population. A striking feature of the epidemic is that more women are being infected than men, and that women typically get infected at much earlier ages than men (with consequent greater losses of healthy years of life). **One of the most significant features of the epidemic is its concentration in the working age population (aged 15-49) such that those with critical social and economic roles are disproportionately affected.** It is also important to note that patterns of employment, especially the migration and mobility of workers, play an important role in the transmission of HIV. Finally, a consequence of the epidemic with long-term effects is the impact on children. There are presently an estimated 12 million children who have lost their mother or both parents to the epidemic, and this appalling number of orphaned children is projected to more than double over the next ten years.²

A simple calculation will demonstrate how pervasive the epidemic is within sub-Saharan Africa. An estimated 20 million people have died since the start of the epidemic. A further 28 million are presently living with the virus and most of them will die within the next ten years. This means that some 50 million people will have died from HIV-related illnesses, including AIDS, before the end of the present decade. If it is assumed that only five people within the immediate family are affected for every person who dies, then some 250 million people are closely affected. To this number needs to be added those less directly affected in extended families, colleagues at work, close friends in faith and other communities – perhaps a doubling of those directly affected to give a total of some 500 million at the lowest estimate.

This numbers game could be continued endlessly but there is no point. What is demonstrated by such simple calculations is the scale of the impact of the epidemic in sub-Saharan Africa, such that most of the population is affected by what is happening. The epidemic has effects on social, political and economic life that we have not witnessed previously, such that all development activities, including those relating to security at national, regional and international levels, have to explicitly address the implications of what

is evolving as a huge humanitarian disaster: the epidemic undermines development and thus further worsens the conditions in which HIV transmission thrives, simultaneously reducing the capacity of families, communities and nations to cope with the complex social, political and economic consequences.

The overall objective of this paper is to provide some insights into the effects of the HIV epidemic on human capital in sub-Saharan Africa through a discussion of some of the factors that are operating. It is not intended as a compendium of data on the problem but aims instead to provide an analytical framework for understanding the policy and programming issues. Section 1 sets out the framework and provides a background for the later discussion. In Section 2 there is an analysis of the impact on the public services in Malawi, which seems to be the only country where there has been a comprehensive estimate of the effects of AIDS on human resources. This is followed in Section 3 by a rather more detailed presentation of the impact in two key social sectors, education and health. In the case of the latter, this takes the form of a review of a case study of the effects of HIV/AIDS on health care in Botswana: an example of what is happening to a system which is well-funded and, by the standards of sub-Saharan Africa, has been providing an excellent service. Finally, in Section 4, there is a discussion of issues relating to the measurement of the impact on different productive sectors and the role of different social partners in adjusting to, and managing, the impact.

I. GENERAL ANALYSIS: WHAT IS THE PROBLEM?

The main channels through which the HIV epidemic affects social and economic development are through its impact on the labour force and its related effects on the level and allocation of savings.³ In the case of the former the effects flow from the key fact that the epidemic has its primary impact on the working age population, where HIV-related morbidity and mortality are concentrated. Thus those with important economic and social roles – both men and women – are prevented from providing their full contribution to development. The effects are, of course, not confined to a simple calculus of labour losses, but have much deeper implications for the structure of families, the survival of communities and enterprises, and longer-term issues of sustaining productive capacity.

Similarly the HIV epidemic erodes the savings capacity of households, formal and informal productive enterprises, and of government, through its effects directly on flows of income and levels of expenditure. Reduced rates of savings will over time lead to slower growth of aggregate output, with the likelihood of declining per capita income. Thus it is estimated by UNAIDS that annual per capita income of half the countries of sub-Saharan Africa is falling by 0.5-1.2 per cent, and that GDP in the hardest hit countries may decline by 8 per cent by 2010. The decline in savings will be broad in its impact on the economy through its effects on levels of capital accumulation, including human investment. It is already the case that lower levels of household savings are having effects on investment in children's education, with consequences for the future stock of those with relevant education and skills. Public services in all countries are facing widespread attrition of trained staff and are unable to replace losses due to budget constraints. The same is happening with directly productive activities, such as mines and plantations, where losses of personnel are taking place at an accelerating rate.

In aggregate, the HIV epidemic is eroding the capacity for development through its myriad effects on labour supply, saving rates, national security and social cohesion. It follows, from this brief analysis of the ways that the epidemic undermines development, that social and economic development will be most adversely affected in those countries with high levels of HIV prevalence, where morbidity and mortality will lead to severe losses of labour, skills and experience. The effects are being compounded, as will be seen below, in those countries where HIV infection rates rise with social and occupational status.

1. Heterogeneous labour: why this is important

Development practitioners no longer believe that labour is in unlimited supply in developing countries, nor that it can be replaced without cost. Empirical data has exposed the fallacy of this reasoning, and it follows that analysis suggesting that 'unskilled' labour lost through epidemic diseases such as HIV can be easily replaced is based on a fallacy. Indeed there is a great deal of evidence that even so-called unskilled labour has accumulated location- and task-specific skills that are very hard to replace.

This is most obviously true in respect of agricultural skills, but also of other economic activities where it may appear as if the skills can be easily replicated and replaced. Clearly family-based producers, who account for most farmers in sub-Saharan Africa, face critical constraints in replacing labour lost to HIV and AIDS. This follows from the fact that most producers do not have access to labour markets, and are thus generally limited in the degree to which they can hire labour to meet their needs. It is far from clear how they are currently

dealing with this problem, and it is equally unclear how they will be able in the future to cope with the losses of human capital that are involved. That the problem is severe is demonstrated by a recent FAO report which estimates that some 7 million rural producers have died of AIDS since 1986, and that over the next two decades a further 20 million will be lost.

There are a set of related and very important issues such as how skills and knowledge are passed on to children, and problems related to the gendered nature of many tasks in agriculture, and other areas of household production including food processing, brewing, marketing, house building and maintenance.⁴ In most countries there are no mechanisms in place to address these critical questions. It is far from clear who has the capacity to deal with these and other matters – but these urgently need to be addressed. Otherwise it is very unclear how production of food and other crops will be sustained both now and in the future, and how households will be able to reproduce themselves as viable social and economic entities.

Similarly, the impact of HIV/AIDS is pervasive and complex in the informal sector, which has in all developing countries been a dynamic source of employment and income growth in the past several decades. Not least of the effects are the consequences of morbidity and mortality on the sustainability of informal sector enterprises that are highly dependent on internal generation of flows of savings for their survival. Savings are threatened by the demands falling on revenues for higher levels of health expenditures, generated by the need for drugs and care to deal with opportunistic infections such as TB. Even more important, so it appears from the limited evidence, are the losses of experience and management/technical skills which are so essential for survival.

It is also evident that within the category of ‘labour’ there is a range of capacities which are undervalued by conventional classification and are often largely unrewarded by market processes. This is particularly true of those tasks that can be classed as organizational – such as those undertaken by supervisory workers. It is well known that these workers – supervisors- often play key roles in production, and since their skills are often derived from years of experience, the losses in output due to HIV and AIDS will be much larger than that measured by their wage. The probability is that losses of key personnel with job-specific skills and organizational experience will cause disruption to production and losses of product quality. Such personnel are not easy to replace, and losses of embodied human capital will impose significant constraints both on production processes and on available technology.

At least three broad conclusions can be drawn from the foregoing:

- The problems of losses of human capital are not confined to the skills and training that are the output of formal processes of education and professional development. There exist in all societies learning processes that create a vast range of skills adapted to specific social and economic patterns. The HIV epidemic is systematically eroding these essential capacities of both women and men. These social and economic losses of heterogeneous labour cannot easily be measured by standard economic costing, in part because society does not always attach formal values to these skills. This is especially true of the economic and social contributions of women. **It follows that attempts to measure these costs by economists through valuations based on average wages or some other indicator are likely to be significant underestimates of the social and economic value of the losses of human capital that are being experienced.**
- Furthermore, once it is accepted that labour is heterogeneous and often highly skilled it follows that **there will be no easy adjustment in formal or informal production**

to the losses of labour caused by the HIV epidemic. The fact that there may appear to be a large pool of unemployed or under-employed labour in a country does not imply that the replacement process will be simple and costless. Quite the opposite seems to be the case, thus posing yet more problems for policy in attempting to sustain productive capacity through replacement of losses of human capital.

- Finally **it is important to see the issues as systemic** – the economic and social system depends on the parts functioning normally and efficiently. The HIV epidemic disrupts this smooth functioning of the economy and of society in ways that lead to a magnification of the initial sources of economic disturbance. For example, a functioning economy depends on the legal system working normally with business dealt with expeditiously, but losses of legal clerks, judges and so on will no longer make this possible. Or to take another example of capitalized commercial agriculture where capital assets, such as tractors and so on, depend on the ready supply of purchased inputs from specialized firms. But losses of skills in these firms will prevent the efficient functioning of commercial farms (so that their costs will be increased and production disrupted). Furthermore, disruptions of the transport system will have widespread effects on productive capacity in all sectors.⁵

2. The loss of workers with professional training and higher education

While evidence on the social class gradient of infection is very partial, and mostly absent for most countries in sub-Saharan Africa, there is some data that supports the argument that HIV infection in the past decade or so did positively correlate with income, educational level and occupational status. There is also a good deal of partial information from many sources and countries that suggests that the epidemic is systematically eroding the stock of human capital across all sectors in the worst affected countries, with losses **proportionately** highest for skilled, professional and managerial labour. Thus studies of the education and health sectors in a number of countries in sub-Saharan Africa (SSA) point to exceptional and large losses of human resources – with further losses predicted during the coming decade (see Sections 2 and 3 for a review of some of this data).

The challenges facing many countries in maintaining key social and economic sectors in the face of severe losses of human capital are extremely daunting – and most governments seem not to have understood the scale of the problems that they face.

Past modelling of the effects of the epidemic confirms what is fairly obvious, that the impact on the growth of GDP of the HIV epidemic is greatest where the losses of labour are concentrated amongst those with scarce skills and higher professional and managerial training. In part this reflects the inadequacy of the present stock of people with these capacities in developing countries, such that the losses of human capital due to HIV and AIDS will have a major impact on the processes of development. It has been long accepted by development professionals that increasing the stock of human capital is essential for development, and that losses of human capacity due to disease will impede what countries can achieve in terms of poverty reduction and other development objectives. Indeed the countries in SSA with highest HIV prevalence are already showing sharp reductions in life expectancy, and further declines are predicted over the coming decade.

Improving the stock of human capital has been a major objective of developing countries, and of international donors, precisely because of its assumed causal significance in the processes of development. Achieving this objective has absorbed large quantities of both

public and private resources – both national and international in origin. **It follows that the erosion of human capital due to HIV and AIDS has not only personal costs for those affected, but also significant social costs in terms of lost output due to morbidity and the premature mortality of those who have been educated and trained at great expense.**

The HIV epidemic not only reduces the **stock** of those with higher level professional and managerial training and experience but it also reduces the capacity to maintain the **flow** of those with needed skills and training. There are several reasons for this reduction in capacity:

- The most important direct effect comes from the losses of those with appropriate training, experience and education, who have the task of maintaining the **flow** of newly trained labour. This follows from the fact that institutions with training and educational functions are themselves losing staff due to HIV and AIDS so that their capacity to meet demands is reduced (including the need to replace their own staff who become sick and die from HIV-related illnesses and AIDS).
- It is also the case that significant improvements in the quality of the labour force occurs through on the job training and experience and for various reasons it is likely that this process of enhancement of skills will diminish due to HIV and AIDS – most obviously because of pressure on labour costs of all enterprises due to AIDS, and less obviously because the capacity for on the job training will be diminished by the loss of experienced workers within the enterprise. The opportunity to learn by doing and by observing other more experienced workers will simply be eroded by the organization's experience of the epidemic.
- Insofar as personal and other savings are reduced through pressure on both income/sales/tax revenues and increases in expenditures such as health, welfare support, and so on, there will be a reduced flow of savings to finance the maintenance of the stock of human capital. There will also be a diminished incentive to do so for the personal, private and public sectors – given that the epidemic will reduce both private and social rates of return on investment in education and training.
- Of great significance for successful development in the future is what is presently happening to the care and support provided for children affected by HIV/AIDS. There were an estimated 13.6 million AIDS orphans in mid-2002 (11 million of them in Africa), and it is projected that in the countries with high HIV prevalence rates, by 2010 30-40 per cent of all children will be orphans. There is clear evidence at the present time of children being taken out of school, both temporarily and permanently, to meet care and other labour demands within households. Higher levels of poverty, partly caused by households' experience of HIV/AIDS, are interacting with other factors to erode the educational foundations of societies. What the impact will be - in terms of the effects on the future stock of human capital of children's experience of the epidemic and their reduced access to health and educational services - is for the moment unknown.

II. ASSESSING THE IMPACT OF LOSSES OF HUMAN CAPITAL ON THE PUBLIC SECTOR

The public sector undertakes key functions that are essential for development, and in all countries of SSA a significant proportion of those with technical skills, professional qualifications and management expertise are employed in the provision of public services. Thus the quality and range of public services, such as education, health, law and order, water and sanitation, telecommunications and roads, and so on, are all dependent on flows of finance, and on the stock of public employees with the requisite skills and expertise. It has long been an objective of governments, and donors, to enhance the range, coverage and quality of public services that are available, most obviously in respect of education and health which are often seen as basic rights, as well as being recognized as essential for social and economic development. To this end savings, both domestic and foreign, have been allocated to meeting the human capital needs of countries, and more especially the public sector.

What is argued by development practitioners is that an effective and functioning public sector is a prerequisite for development, and that this is increasingly threatened by the HIV epidemic, which undermines both the stock of human capital and the flows of savings available to finance development. The effects are, of course, not confined to the public sector and as noted above the impact of the epidemic needs to be seen as 'systemic'. But the consequences may be particularly severe for the public sector given its dependence on human resources that have embodied high levels of private and social investment in training and education. Losses of human resources due to HIV/AIDS will thus be especially damaging to the capacity of the state to supply essential goods and services, with effects not only on public services, but more broadly on the rest of the economy.

Most of the above is self-evident, and governments in the region have begun belatedly to ask the question of what is the impact on their ability to perform key functions. To this end there have been several studies of the impact on specific sectors, such as education and health (see the next section), but no general assessment of the impact on public services as a whole. The nearest there is to a comprehensive assessment of the effects on the public sector is a recent report for Malawi on the Impact of HIV/AIDS on Human Resources.⁶ The main results of the Report are summarized below, together with a discussion of its implications for policy.

1. Malawi: the HIV epidemic, human resources and the public sector

(i) *The epidemiological situation*

Malawi is one of the poorest countries in SSA with a per capita income of \$165 (a decline of almost 20 per cent over the past decade), and a UNDP Human Development ranking of 151 (out of 162 countries in the Index). It is also among those countries in SSA with very high levels of HIV: an adult prevalence rate of 16.4 per cent. There is a significant urban/rural differential, with rates of HIV as high as 30 per cent in some cities, while the average for the rural population is around 10 per cent. The age and gender distribution of HIV and AIDS is similar to that in other countries in the region, with most of those infected in the age range 15-40, and with more women in total infected than men. It is also the case that women and girls get infected at younger ages than men. About half of all new infections with HIV are in the population aged 15-24, and 60 per cent of those newly infected are girls and young women.

The factors determining the level and pattern of infection are similar to those in other countries in the region. Among the most important of these are high levels of poverty with more than half of the population classed as below the poverty line. All of the standard social indicators point in the same direction, with low standards of literacy (59 per cent overall and with less than half the women able to read and write), poor access to basic health care, and a significant proportion of children suffering from malnutrition and stunting. There is now a major problem with respect to food insecurity in a very large number of households, and Malawi faces a growing problem with respect to the overall adequacy of food supplies. This is in spite of the fact that some 80 per cent of the population is involved in rural production: an indicator of the degree to which land and labour productivity in agriculture are still extremely low by international standards.

As noted earlier, life expectancy is now estimated at 40 years, which is amongst the lowest in the world. It follows that the demographics of the country are being systematically changed by the epidemic, most obviously in respect of adult mortality, which has doubled, and a reversal of trends in under-5 mortality caused by increasing levels of HIV transmission from mother to child. One of the most important consequences is a change in the age pyramid of the population, with a narrowing of the distribution in the working age population, and a consequent problem with respect to age dependency, with larger numbers of youthful and elderly dependents. There are already large numbers of AIDS orphans, and orphans from all causes are projected to increase to more than a million by 2010, when they will represent more than 20 per cent of all children under the age of 15. It is already the case that large numbers of children are not attending school, and a very significant proportion (over 50 per cent) display stunting due to inadequate nutrition.

There are few signs that existing policies are being effective in reducing the incidence of new HIV infections and in mitigating the impact of the epidemic. This is in spite of the fact that economists and others have argued for at least a decade that HIV/AIDS poses a major threat for Malawian development. Policy has until recently remained far too narrowly focused on health-related aspects of the epidemic, and government has in the main failed to develop and implement an effective multisectoral response. In part the tardiness in responding to the epidemic is a result of fiscal constraints, and in part is due to an ongoing failure to understand that the epidemic has its origins in structural conditions such as poverty and gender inequality. Whatever the explanation for the slowness of response, it is now the case that Malawi faces major problems in mitigating the impact of the epidemic, not least in maintaining public services in the face of large scale and ongoing attrition of human resources.

(ii) Measuring human resource attrition

The study by the Malawi Institute of Management is important precisely because it is an attempt to measure attrition of human capital across the public sector in a country experiencing a mature epidemic of HIV/AIDS. The departments covered were the Ministry of Education Science and Technology, Ministry of Agriculture and Irrigation, Ministry of Health and Population, Malawi Police Service and Ministry of Water Development, which together account for 80 per cent of the public sector in terms of employment. By far the largest of the ministries covered was Education with over 62,000 staff in post in 2000.

A standard methodology was applied to each Ministry in the measurement of attrition and the consequences in terms of costs and service delivery. In all cases there were problems with respect to data, and indeed for the Ministry of Health there was no information available

even on existing staffing. One of the firmest recommendations from the report was that management information systems be radically improved, so that managers and policy makers have the data needed for responding effectively to the challenges that they face. It might seem self-evident that data on staffing, attrition, absenteeism, recruitment and other costs, effects on service delivery etc. would all be collected but unfortunately this is not the case. It is unsurprising, therefore, that the policy response to the losses of human resources has in general been very ineffective.

What does the data show? Over the period 1990-2000 total annual attrition from all sources has risen almost six times from 347 at the start of the period to over 2,000 in the final year. The average rate of attrition in all ministries, excluding Health, was 2.3 per cent, although there is great variance in the experience of different ministries (for Water Development the rate was 15 per cent). The causes are complex although one stands out in all of the organizations (including Health): death is the highest cause of attrition, varying between 40 per cent and 58 per cent. Mortality varies across ministries with the highest rate being in Health where 6 out of 10 cases of attrition are due to death. The report has no explanation for the very high rate of mortality in the Ministry of Health, and simply hazards the possibility that it may be “occupational vulnerability...or activities external to the work environment”.

For the public service as a whole mortality over the period has increased by a factor of 10, a situation that has to be due primarily to the impact of HIV/AIDS. The study concluded that, “deaths are disproportionately high among young adults of both sexes...Deaths among women rise significantly during the age group 20-34 after which a decline sets in. Deaths among men rise even more sharply in the same age group.....This age and gender profile corresponds with HIV/AIDS- related mortality trends”.

This conclusion is obviously valid since high levels of mortality among youthful age groups would not be observed except under conditions of HIV/AIDS. The age and gender distribution of mortality are a clear indicator of the personal and social costs of the epidemic, and confirm the scale of the losses of social and economic output due to premature death. Staff would have continued to contribute to national output for a further 20-30 years in the normal employment cycle, but are unable to do so due to HIV-related mortality.

The study also looked at mortality by occupational category and came up with very interesting and disturbing results (which are not reported in any detail here). They estimated excess mortality, i.e. the rate by which observed mortality exceeds the standardized mortality rate (SMR). This confirmed many of the observations made in this paper on the need to look at the pattern of mortality classified in terms of human capital, for the social and economic impact will be greater, other things being equal, the higher the skill and professional characteristics of those affected. All of the occupational categories showed SMRs that exceeded 100, with the highest in Water Development (an SMR of 980). Surprisingly the estimated SMR of secondary teachers is 95 and of primary school teachers is 61: this is entirely unexpected given what has been extensively written about the vulnerability of educators to high rates of HIV and AIDS.

It is worth commenting on mortality trends by occupational group in two ministries. In the case of the Ministry of Agriculture which has an important role in a country which is overwhelmingly dependent on rural employment and production, there were major losses due to HIV/AIDS. The report concluded that, “all occupational categories experienced excess mortality, with higher mortality rates among professional staff than among junior technical

staff...deaths among Research Scientists and Agriculture Officers are double the average mortality rate in Malawi”.

In the case of the Police Service the situation is every bit as severe. Two-thirds of reported mortality was in the age range 20-40 and thus in the groups of “relatively new entrants and junior officers who are the hub of police activities....their disproportionate deaths will certainly affect the quality of service and the pace of reforms”. The study estimates that in effect some 15-20 officers die every month from HIV- related illnesses, many of them recently trained at considerable expense and many of them embodying higher levels of formal education.

(iii) Measuring and responding to impact

The costs of the HIV epidemic are not confined to estimates of lost output due to early mortality, although these are clearly very significant. There are other costs that are also significant. Among these are costs to service delivery due to absenteeism both directly due to illness, and indirectly caused by funeral attendance, caring for sick relatives, disruption of the flow of work, and so on. These are estimated by the study for each of the ministries and are found to be very significant. They note that policies with respect to sick leave and more general absenteeism are not being observed, and that in any case that under present conditions require urgent reform if the public service is to be able to continue to function.

Perhaps even more significant has been the slowness of the reaction of the ministries to the attrition that they have now been experiencing for at least the past decade. Many posts have remained vacant for long periods of time, so that overall vacancy rates have increased to extremely high levels. Thus the vacancy rate in Education is 58 per cent (more than half of the established posts are unfilled). In the case of Water Development it tripled between 1995 and 2000, from 18 per cent to 52 per cent. In Agriculture the rate has increased for all occupational categories and “the highest rate is recorded amongst .. professionals at 67 per cent”. The situation is similar in Health and the other ministries, where AIDS and other factors such as poor levels of pay and deteriorating conditions of service have interacted to produce the extremely unfavourable state of affairs observed.

One of the interesting features of the vacancy situation in all ministries is that the rate is higher in rural than in urban areas, which must imply that the reduction in service delivery is greater in the former. Thus the process of filling vacancies helps to reinforce the urban bias in service delivery that is already present in Malawi.

To the above costs have to be added those that are directly experienced in the budgets of the various ministries due to funeral costs (which are substantial), recruitment and training costs for new staff, and so on. These have become very high given the scale of attrition of human resources that is being experienced across the public service. It is natural, therefore, under these conditions that posts will be left unfilled for many years with effects on service delivery that are difficult to measure. The report does not in fact attempt to measure this very important effect although it does conclude that, “In all ministries it was noted that productivity and performance suffered from increased absenteeism, the high and growing levels of vacancies, and associated workload pressures....the extent to which productivity is undermined is difficult to quantify”. But it is, of course, not impossible to do so, and the next step should be to do so. It is clear that one of the adjustment mechanisms of the public service, additional to those noted above, has been accelerated promotion, with consequential adverse results on overall service provision that are noted in many parts of the study.

The overall conclusion of the report is worth noting in full:

The loss of experienced staff impacts negatively both on the coverage of service provision, through a reduction in the total number of staff, and on the quality of services, caused by the loss of skills and experience. Whereas the first (shortfall in the number of people) may be relatively easy to deal with, the second (loss of experience) amounts to a substantial organizational loss. Depending on which staff categories are most affected, certain organizational functions and capacities will be eroded, which will inevitably impact negatively on the core business of the organization.

It should be noted that none of the ministries in the study had effective workplace programmes, although some parts of the public service have made some progress in this regard (with the military a model for the rest of the public sector). Why there has been so little progress in integrating HIV/AIDS in workplaces in Malawi is a puzzle, given the revealed scale of the problems facing the whole of the public sector.

Conclusion

The study provides a good basis from which to move forward. However, it only begins to discuss the actions required for the public services to undertake the functions that are expected of them. The answers do not lie in collection of more data, useful though this may be in moving forward. What is needed is to activate the moribund planning departments in the different ministries, which the report concluded were failing to do what they were supposed to do, to increase the capacity to plan how best to mitigate the impact of AIDS on each ministry's functions. The remit in going forward needs to be much wider than that foreseen by the authors of the report. What is urgently needed is to undertake structural reforms of functions, and then align capacities with the feasible set of tasks that are attainable under the constraints facing the public services in Malawi. Unless this is done then services will over time collapse under the impact of the epidemic.

III. ASSESSING THE IMPACT ON HUMAN CAPITAL IN TWO KEY DEVELOPMENT SECTORS

1. The critical roles of education and health

It is unsurprising in the circumstances described above that key social sectors such as health and education should be affected by the epidemic – both directly and indirectly. These effects are complex and the interactions between sectors are only now beginning to be identified by researchers and policy makers. This in spite of the fact that more than a decade has elapsed since attention was drawn to the probable impact of the epidemic on these key sectors. This lag in response is hard to understand, but has led to delays in adjusting the aims, structures, and operational modalities of educational and health care systems within SSA.

The reasons for separately identifying these two social sectors are more or less self-evident. Improvements in education and in health are both seen as critical inputs for achieving sustainable development, while at the same time they are useful indicators of the success or otherwise of the development strategies actually followed by governments and donors. While in general there has been limited progress towards achieving international targets in respect of both education and health, it is still the case that performance lags well behind what is achievable and needed. Thus it is still the case that about half the primary age cohort in Africa is not attending school, and there are severe doubts about the ability of countries to achieve ‘primary education for all’ by 2015 (the revised target year for this objective). In the case of Health the gap between rich and poor countries is if anything widening, most obviously in terms of aggregate measures such as life expectancy as noted above, but also in respect of epidemic diseases such as TB.

The HIV epidemic makes it even more difficult for countries to achieve their objectives in education and health, both directly and indirectly. Thus most households affected by HIV/AIDS face deepening poverty, and part of their adjustment to this state of affairs relates to decisions on school attendance. This makes it more difficult to achieve educational objectives in general, but most obviously in the case of education of girls, where the need for additional enrolments is greatest. There is evidence in some countries of declining school enrolments, mainly due to intensified poverty in households affected by AIDS, with disproportionate effects on the education of girls.

Improvements in education have been seen as essential for reducing HIV transmission, since in part the risk factors faced by young people are the outcome of low levels of literacy that impede access to information relating to HIV and AIDS. Similarly risk behaviours for HIV are enhanced under conditions where employment opportunities are constrained due to low levels of education and skills. It follows that raising educational attainment is an important element in any successful strategy for responding effectively to the HIV epidemic, but the epidemic generates conditions both directly and indirectly which makes this target increasingly unattainable.

Similarly, HIV and AIDS have direct and indirect effects on the healthiness of populations, with adverse consequences for morbidity and mortality. As will be seen below, even functioning health care systems like that of Botswana are increasingly unable to sustain the capacity to meet higher levels of demand for health care. But a functioning health care system is essential if the needs of those living with HIV are to be met, and if essential services such as those relating to diagnosis and treatment of sexually transmitted infections are to be available. The HIV epidemic not only raises the demands on health systems but it

simultaneously erodes the capacity to provide services, with effects that are only now being documented.

Education and health clearly interact: a better educated population will generally be a more healthy one. In part this is related to the fact that improvements in education will lead to greater understanding of health factors, such as hygiene and nutrition. In part it relates to improvements in environmental conditions, such as housing and better access to health care, that accompany rising living standards. The improvements in living standards reflect the investment in human capital, with expenditure on education and health being essential to the process. This crucial interaction of health and education are threatened by the HIV epidemic, while at the same time improvements in both are essential for effective responses to the conditions in which the epidemic thrives. At the core of these developments in Africa are the losses of human capital that are presently taking place.

2. Reviewing the evidence

The following is a brief review of the effects of HIV/AIDS on education: for a more extensive analysis see the excellent survey published by the International Institute for Educational Planning.⁷ This is followed by a detailed discussion of the impact on the health sector in Botswana, a country which is estimated to have the highest level of HIV prevalence worldwide (some 36 per cent of adults infected with HIV). The objective in what follows is to indicate the magnitude of the problem for Human Capital for the two sectors, together with a discussion of some of the implications for the economic and social system as a whole.

3. Education sector: recent trends in the balance of demand and supply

It is estimated that there are some 2 million primary school teachers in SSA, of whom 42 per cent are women. In the case of secondary schools there are 650,000 teachers, of whom 32 per cent are women. To these estimates need to be added those employed as administrators, managers, support staff and so on, and the very significant numbers in the tertiary sector many of whom have graduate qualifications. Overall the educational sector is probably the largest employer by a very significant margin of those with higher level educational and professional skills. Thus the impact of the HIV epidemic on staffing is of immense importance for the delivery of educational outputs, both currently and in the medium to long term. But the effects do not end with issues of staff mortality, important though this is for education. Organizational performance will also be affected by morbidity, which can lead to extensive disruption of activities, and by the impact of the epidemic on morale and internal and external disharmony.

A complex set of factors is operating, and there exist major problems with estimating what is happening on the ground given the large number of schools etc. that are potentially affected by the epidemic. Conceptually it is not difficult to separate out the main factors. On the demand side there will be fewer children to educate given the demographic and other effects of the epidemic. Thus greater adult and child mortality due directly and indirectly to HIV/AIDS will create a smaller age group than would have been the case without AIDS. While the effects on fertility are unclear it is certainly possible that completed families will be smaller, in part due to higher levels of adult mortality in general, and particularly of women. Since families affected by HIV/AIDS are experiencing higher levels of poverty, and children are increasingly being required to take on household tasks, then the cohort able to afford and complete education will decline.

The effects on the supply side have been noted above. There will be fewer teachers and other professionals due to HIV-related mortality, and this will affect available expertise amongst those who deliver teaching and other management inputs. Higher levels of morbidity will adversely affect factor productivity in ways that will reduce the overall capacity of the sector. These effects will be intensified and spread throughout the system through the mortality and morbidity of those who are managers, inspectors, education officers, and so on. Finally the system will in time adjust the distribution of educational facilities in response to the various factors that are operating – from both the demand and supply sides.

For our purposes the question is, what will be the effect overall on the educational system, and more particularly the impact of the epidemic on human capital? Here the evidence is conflicting, which in part reflects the paucity of data on what is happening to both supply and demand factors. Some of these issues are taken up below, but it is perhaps worth setting out in summary some of the different positions that currently exist. The conclusions of different researchers are overlapping, and although their results may differ in detail there can be little doubt that the HIV epidemic is eroding capacity in the educational sector, and this will make it extremely difficult to sustain the level of human resources needed for social and economic development.

World Bank projections of the primary school age population and of projected teacher mortality in four African countries (Zimbabwe, Zambia, Kenya and Uganda) leads to the tentative conclusion that, “The change in the number of teachers needed is greater than the change in the availability of teachers”. But as the Bank notes, “The demand and supply analysis used ...is meant to be indicative and should be used cautiously...It does not consider other impacts of the epidemic on teacher supply, notably absenteeism, ...equally it does not quantify other impacts of the epidemic on the demand for educational services, e.g. the ability of HIV- affected households to pay for schooling,” and meet related costs, such as school uniforms, books and so on.⁸

There are all sorts of demographic issues and aggregation problems in making these projections and a good deal of uncertainty must attach to the underlying results. But even so the picture presented by the Bank is extremely gloomy: reductions of the primary school age population by 2010 of 24 per cent (Zimbabwe), 20 per cent (Zambia), 14 per cent (Kenya), 12 per cent (Uganda). The losses of teachers due to AIDS between 2000 and 2010 for the same countries are estimated annually at 2.1 per cent, 1.7 per cent, 1.4 and 0.5 per cent which are cumulatively very large losses indeed. As for orphans, the growth in numbers is striking; again for the same four countries for the period until 2010 the increase in orphans aged 0-14 is 25 per cent, 19 per cent, 17 per cent and 5 per cent.

There have recently been three related studies of the effects of the HIV epidemic on primary and secondary education in three countries with high levels of HIV prevalence (Malawi, Uganda and Botswana). The conclusions of the three studies have been consolidated in a single report and this remains the most detailed analysis of impact.⁹ It needs to be borne in mind that their results, although very detailed, are based on a survey of only 41 schools across the three countries. It is risky, therefore, to generalize from their small sample to sub-Saharan Africa as a whole. They conclude from their survey of the data that, “With some important exceptions (Zambia and Malawi), teacher mortality rates were somewhat below 1 per cent in most high prevalence countries (HPCs)...Equally important, overall teacher attrition is high in many countries as a result of low pay and morale....Consequently teacher deaths account for less than 20 per cent of all attrition in a number of HPCs, including Malawi, Namibia, South Africa and Uganda”.

Nevertheless their overall conclusion from a review of existing estimates for SSA is that, “200,000 teachers, 9.4 per cent of the total employed in 1999, could die of AIDS-related illnesses over the next decade. This projection is based on three key assumptions, namely that teachers have the same age and HIV profiles as the rest of the adult population, that the 1999 adult HIV prevalence rate in each country will not increase, and that teachers are unable to access life-prolonging antiretroviral drugs. Five countries will account for nearly two-thirds of these AIDS-related deaths among teachers – Kenya (25,000), Nigeria (22,100), South Africa (44,900), Uganda (14,900) and Zimbabwe (16,200)”. Some of the assumptions seem on the basis of other information to be somewhat optimistic, and the outcomes likely to be considerably more adverse.

The Bennell report reviews trends in mortality and also of student enrolment and so on, and comes to a conclusion on the net impact of HIV on teacher needs. With caveats about the scale of teacher morbidity, the effects of socio-economic and other factors on school enrolment, it concludes that, “In all six countries (Malawi, Uganda, Botswana, Kenya, Zambia and Zimbabwe), the reduced demand for teachers outweighs the increase in AIDS-related mortality over the next decade. Somewhat perversely, therefore, the AIDS epidemic will make it easier to reduce student-teacher ratios and meet Education for All targets”. This conclusion is the opposite of that reached by Kelly whose study of the impact of AIDS is noted above. Kelly concluded that, “The high rates of AIDS-related mortality may raise the demand for new college educated graduates above the supply, prolonging the dependence of schools on unqualified teachers”.

4. Responding to systemic impact

There is thus general agreement on the nature of the problem – that the HIV epidemic is indeed eroding the capacity of the educational sector to undertake its primary tasks. There is general agreement also on trends, i.e. that the problem is intensifying and will get worse over the coming decade in sub-Saharan Africa. There is less agreement over the scale of the impact of HIV/AIDS on educational systems in Africa, although all of the studies noted in the previous section, and other researchers and practitioners employed in education at all levels, would agree that education faces a crisis. That the epidemic is eroding human resources is incontestable, and the issues are about the measurement, the scale, and the overall impact on both education and the social and economic system.

It is clear that there are major gaps in knowledge about what is happening, including the following:

- There is an absence of firm data on the losses of human resources throughout the educational sector that is currently being experienced in many countries. In general we do not know what is the level of absenteeism caused directly and indirectly by the epidemic across the sector (at all levels of education, primary through tertiary), and across skill and experience categories (of teachers, assistants and administrative support).
- Similarly with losses of human resources due to mortality where important social investments are being lost due to HIV and AIDS. It should be noted, furthermore, that the erosion of human resource capacity is not something that can always be replaced through formal training – assuming unrealistically that resources were sufficient for replacing teaching and other personnel. Losses of experience cannot

be simply replaced, and we have little or no information on the impact on organizational capacity of mortality amongst senior teachers, teacher trainers and administrators.

- There are few signs that Ministries of Education (MOE) recognize the problems that they are currently faced with in terms of the impact of the epidemic. Only in a limited number of countries is any attempt being made even in the broadest terms to estimate what are likely to be the probable losses of teachers over the coming decade. In many countries MOEs seem primarily to be concerned with issues related to HIV prevention through curriculum reform, but do not seem to have realized that whatever the merits of such activities they have to be seen as secondary to sustaining sector capacity. If the capacity to teach is not maintained then the curriculum will in time not be deliverable. It is also questionable whether MOEs have the capacity and the resources to grapple with the exacting tasks that they now face. Even if they recognize the scale of the problems it is evident that they will simply be overwhelmed unless they are provided with additional resources.
- There is little information on school drop-out rates and how these are related to the increase in household poverty directly due to HIV and AIDS. Are there changes in the pattern of school attendance due to the impact of the epidemic on households, what are these caused by and are they gendered? There is some evidence that girl children are affected differently from boys, such that girls are increasingly absent from school populations.

Finally there are a set of issues which are being ignored in most countries, perhaps in all countries, in SSA.

What effects are the losses of human resources generally throughout the economy and society having on the demands facing the educational sector? There is very little knowledge in all countries about the distribution of the epidemic in terms of its impact on skills and experience in both education and other sectors. We do know from some studies in some countries, e.g. in Botswana and Zambia, that significant losses of skilled and professional staff are being experienced by the health sector due to HIV-related mortality. As we have seen from the Malawi study noted above, the losses of human capital are not confined to health but are much more general across the public services.

The question arises as to what the educational sector can do both to fulfill its own demands for replacement teachers, administrators and so on, as well as meet the specific needs of other sectors. There is no evidence that any country has begun to address comprehensively the human resource planning issues raised by the HIV epidemic, and whether or not there is capacity domestically or externally to meet the needs for critical skills and training. It is almost certain that countries will not be able to meet their core needs for specific skills and professionally qualified personnel, so how is some sort of 'residual minimum' to be maintained?

There are systemic effects of the epidemic which are bound to have an impact on the performance of the educational sector. Again there is no evidence that education ministries are aware of the implications of the generalized effects of the epidemic on their own capacity to function. Yet the effects must already be apparent in many countries and many educational establishments. As is increasingly recognized, the epidemic erodes productive capacity across all sectors, both urban and rural, and this will affect the educational sector. But no-one knows

the current effects on educational performance of changes such as fewer health care workers, disruptions to banking and financial services, and losses of transport capacity.

There are macroeconomic and household financial issues that have in no country received any systematic analysis but are central to the sustainability of the education sector. These include such questions as the effects of fees on access to schooling, and the consequences that abolishing fees would have on the financial viability of schools and school systems. There is clear evidence that intensified poverty, in part the result of the erosion of the asset base of households and other pressures on current resources, has the effect of reducing school enrolment and attendance. Yet it appears still to be the aim of many governments, often supported by the World Bank, to shift to ‘fee for access’ as a fundamental principle of school finance. This principle makes no sense whatever given the constraints faced by families and communities. Overall what is the scale of the problems facing households and how best can these be provided for?

The issue of school funding and the increasing dependence of teachers on fees for payment of their salary needs urgently to be revisited by Governments and donors. Similarly with macroeconomic financial issues, there is no quantitative information on the impact of the epidemic on overall costs of educational systems, and what would be required for funding the structural changes that will need to be implemented. Thus what are the current costs of absenteeism? What are the probable costs of meeting insurance and other obligations to staff employed in the educational sector? What costs will be entailed in trying to replace staff who are sick or die, and how will these be met? What are the budgetary and other needs that will be entailed if the educational sector is to meet its obligations?

Conclusions

- The epidemic is systematically eroding the capacity of educational sectors in many countries in SSA. This makes it even less likely that education will be able to meet its core responsibilities. Indeed since there is already a gap between educational objectives and achievements in almost all countries in SSA then the HIV epidemic will worsen the performance of an already under-performing sector.
- The effects of the epidemic on the educational sector are complex, and there are few indications that Governments and MOEs understand what is happening to educational capacity and the need for them to re-structure organizations so as to be better able to deal with intensifying constraints and new demands. Examples could include the introduction of shorter periods of training for teachers together with changes in curricula.
- One of the key issues is how to help governments and MOE to understand the issues and develop effective and relevant policies and programmes. It seems highly unlikely that this will happen without substantial external assistance.
- Finally, it is hard to see how the stock of human capital can be maintained given the erosion of capacity in the education sector presently underway. The implications of this for sustainable development in the region cannot be assessed accurately given our present knowledge of the complex interactions that are involved. Certainly estimates of the impact of HIV/AIDS on GDP are mere approximations of the aggregation of effects on the overall development of the region. However even the most optimistic assessment is that indicators of social and economic development are significantly lower as a result of the epidemic.

5. Health sector: the case of Botswana

Botswana has the highest recorded prevalence of HIV of any country with an estimated 36.5 per cent of adults infected. Unusually there is very little difference in urban and rural rates of HIV, and this is probably a reflection of very high levels of internal labour mobility. Women have higher rates of HIV than men, and infection generally occurs at younger ages. As in other countries in Africa HIV/AIDS is concentrated in the working age population. It is unsurprising given the age and gender distribution of HIV infection, and the absolute scale of the epidemic, that the demographic and other impacts are very extensive. Life expectancy has fallen to less than forty years, and a recent report for the Government predicts that a quarter of the total population may die from HIV/AIDS by 2010.¹⁰ It follows that all aspects of the social and economic system face a deepening crisis, not least the health sector which has such a crucial role to play in the response to the epidemic.

The Government of Botswana commissioned a report on the impact of HIV/AIDS on the health sector in 2000, and since this is one of the very few comprehensive analyses of the effects of the epidemic it is worthwhile looking in some detail at its conclusions (Government of Botswana/UNDP, 2000).¹¹ The report is very detailed, and the following represents a selection of the conclusions that are relevant for our purposes, in particular the effects of the epidemic on human capital. It is self-evident that a functioning and effective health care system is critical if the full potential of the labour force is to be realized, but this is a condition that is increasingly unattainable under conditions of a severe epidemic of HIV such as that being experienced by Botswana.

The report concluded that much has been achieved, and there is much dedicated service by Botswana and others. This is not being questioned: the issue is one of reform and change. Unless it is understood why the system has exhibited such inflexibility of response to new challenges it will be hard to bring about productive change. Here is the challenge: to maintain what is good while adjusting to the changing realities of a world with HIV and AIDS, i.e. under conditions where the human resources available are diminishing and the demands are increasing. But this adjustment cannot be avoided, otherwise the system of health care will collapse.

The central message of the authors is that “HIV/AIDS will not only create a massive new need to be met by the health system but it will also reduce the capacity of the health system to respond to this need.” Furthermore, “the health sector has yet to experience the full force of the HIV epidemic either in terms of infection levels among employees or AIDS cases and deaths.” Thus there is a need for a “comprehensive response that involves all levels of the health system....Fundamental review of any aspect of health system function and planning is justified...a comprehensive strategy that considers all relevant impacts and options has not yet been developed.” The report reveals a situation which is extremely worrying for the capacity of the health system to provide the services for which it is established, and it paints a picture of a system which is not adjusting or responding effectively either to current problems or to those which it will face in the coming years.

There is evidence that effects on human resources are already being felt in Botswana, although this is not being effectively recorded or reported, and managers are ill-equipped to deal with the emerging issues. Evidence from other countries in the region suggests that the likely magnitude on human resources will be immense – for example a study by WHO in the early/mid 1990s in Zambia concluded that 40 per cent of health sector staff were infected with HIV. The Botswana report presents various projections and concludes that **“the proportion of health workers infected is substantial, with 17-32 per cent infected in 1999**

and 28-41 per cent potentially infected by 2005HIV/AIDS will impose increasing direct and indirect costs on the health sector.”

The report identifies all of the costs that are direct and those that are indirect – specifically those that will face the Government. This is an impressive listing of the general costs imposed by the HIV epidemic on the health sector, and to a degree on the wider economy and society. It concludes after a review of other countries’ experience that, “non-health care and indirect costs can contribute a very substantial proportion of costs”. What the authors emphasize is the well-known fact that costs (direct and indirect) are substantially determined by the skill profile of those infected – a significant conclusion follows from this in that efforts have to be made to maintain skilled labour capacity in whatever ways possible. They conclude that employers are in a position to manage impacts, although this seems not to be happening in Botswana, and that “Organizations with well-developed, integrated Human Resource management and Industrial Relations capacities are more able to manage HIV/AIDS costs”. These capacities are something the report finds lacking at the present time in Botswana.

There is a listing and analysis of direct costs to the Botswana public health sector (including government contributions to private insurance for some public servants, retirement and death benefits, housing benefits, car allowances/loans, salary advances), and the conclusion that urgent review is needed in the light of the epidemic. The report raises some interesting issues about housing loans and indirectly about the need for additional financial regulation of those institutions advancing mortgages and life insurance in the light of HIV and AIDS. There is also a very important listing of the actions required to reduce the scale of the indirect costs falling on Government. One conclusion is that “supportive environments should be created for HIV positive employees to reveal their diagnosis and to allow for planning to accommodate absenteeism to become more effective.” How to create this supportive environment is the critical question for managers that needs to be addressed and answered. Another key conclusion is that “A final major priority to be actively addressed by the health sector is reducing stigmatization of HIV/AIDS. Stigma currently undermines prevention and provision of more effective care, quite apart from increasing the human cost of HIV/AIDS.”

The report quite correctly sees stigmatization and the lack of openness in discussion of HIV as inhibiting all aspects of an effective response to HIV and AIDS. But there is a need for an urgent analysis of the conditions which have led to this stigmatization and what needs to be done to change attitudes and social behaviour in Botswana. Managers and others have critical roles to play in changing the environment but alone they will not be able to achieve enough. The question remains, what needs to be done to change social attitudes to AIDS in Botswana?

The other key conclusion relates to the need for managers to make contingency plans in the management of human resources. This is self evidently desirable but is not presently occurring in Botswana. There is a listing of the various activities that would increase labour flexibility and reduce costs for the health sector (and for individual employees). It is noted that labour unions and other relevant organizations seem not to have been mobilized in the response to AIDS and that this needs to be changed, and that there have been no consistent workplace programmes on AIDS. There is a more general point here: mobilizing organizations other than those with direct public health responsibilities is critical to the changes that are needed in Botswana if there is to be a comprehensive civil society response.

There is a listing in the report of areas where additional funding is urgently needed. These are mainly health related but there is also an important observation that needs to be taken into account: “Allocation decisions should wherever appropriate consider societal, household and intersectoral costs, in addition to health sector financial costs.” This is supporting a view of decision making which understands that one is dealing with systems, and that the economy and society are made up of parts that are linked. It is essential in determining policies and programmes that the intersectoral connections be part of the analysis undertaken by policy makers. To take an obvious example, an effective home-based care programme has to consider the capacity in households to cope with a patient, including multiple activities which extend beyond the responsibilities of the Ministry of Health. It also means evaluating the social and economic benefits of programmes as well as their financial costs if there is to be a full evaluation of alternatives.

Conclusions

This is a very ambitious report which provides a good starting point for a re-evaluation of the health sector in Botswana. It raises many of the most important issues and sets the scene for a fresh look at the problems and how best to deal with these. But there is a huge amount of further work that needs to be undertaken which will entail hard decisions, changing established patterns of working and adjusting to much harsher conditions in terms of entitlements and working conditions.

Change there has to be if the health sector is to be able to cope with the tremendous challenges that it faces. In its essentials the problem is partly about resource constraints – especially human resources – but it is fundamentally about how to deliver the systemic changes that are needed if the provision of health services is to be maintained, attempting to do so at a time when HIV and AIDS is eroding capacity throughout the economic and social system.¹²

IV. RESPONDING TO LOSSES OF HUMAN CAPITAL: MANAGING IMPACT AND MOBILIZING THE SOCIAL PARTNERS

One of the features of research on the effects of HIV/AIDS on human capital has been the narrowness of its focus. Most studies have concentrated on identifying and measuring a narrow range of costs that enterprises have incurred as a result of HIV infection, such as medical expenditures, recruitment and training costs, absenteeism, funeral expenditures and so on. These are in general costs that can be identified relatively easily from records, and which can be shown to directly affect the expenditures of the enterprise in ways that reduce their profits. The range of such studies is now fairly broad and in the private sector covers sugar plantations, bus companies, copper and diamond producers, and so on. As we have seen above there have in recent years also been studies of public sector activities, such as education at primary, secondary and university level, and others sectors such as health and the military.

The results of the studies of directly productive activities usually indicate that HIV/AIDS is a fairly significant factor for these enterprises, and does have a sizeable effect on their costs, but not on a scale that would lead the enterprise to disappear. The overall conclusion is that management needs to be pro-active in establishing HIV prevention programmes so as to avoid even greater effects of the epidemic on the enterprise's costs and expenditures, and that a positive lead from senior management is essential for an effective response. Without their active involvement very little would actually be achievable.

The information generated by these various studies has been useful as a tool for advocacy in that it has pointed the way forward in the various sectors covered. **But they have been of limited use, in part because of the scope of their coverage (only a narrow range of enterprises have been researched and only at a given point in time), and in part because of their neglect of a whole set of issues that are relevant for an overall assessment of the impact of HIV and AIDS.**

It would clearly be desirable at the minimum to broaden the range of the enterprises that are studied, to look also at intersectoral effects, and to evaluate the impact of factors such as size and location. In general these latter factors have not been used in order to distinguish between enterprises in terms of the impact of AIDS, although there have been several studies that have looked at developments within free trade areas (in Sri Lanka and the Dominican Republic). No studies seem to have managed to follow the impact of the epidemic on enterprises over time and more or less all of the published work seems to have represented a snap-shot of the impact (although drawing on records over relevant past periods of time).

1. The informal sector

One of the great weaknesses of the present state of knowledge relating to the impact of HIV/AIDS is the lack of research on the informal sector, although in most developing countries this has been the most dynamic sector in terms of employment generation in the past several decades. The reason for this is fairly obvious in that research has used standard methodologies that are clearly unsuitable for informal sector activities where records will generally be non-existent or hard to access. But it is feasible to research the effects of HIV/AIDS on the informal sector and there is a limited amount of data on the impact. Thus a study in Kenya in 1996¹³ generated important insights into the unsustainability of such activities in the context of the epidemic due to the excessive dependence on owner-

management, where sickness and mortality led to savings and asset depletion and the loss of key skills and organizational capacity. On the other hand research on small family based enterprises in India demonstrated that they were able to survive the death of owner- managers because the key input of management was more dispersed within the unit .¹⁴ Much more research is needed on the role that such factors as management and ownership structure play in the survival of informal sector enterprises.

2. Impacts on management performance

Other gaps in the state of present research and knowledge relating to the impact of AIDS on human capital at the level of productive activities include the following.

In all productive activities, management has a major role in determining the level of efficiency and yet there has been very little research into the impact of HIV directly and indirectly on the quality of the management function. Most research has been on what can be best described as operational activities and the effects of HIV/AIDS on the performance of non-management personnel. But it has long been hypothesized that HIV infection increases with socio-economic status such that many enterprises within both formal and non-formal sectors will be facing losses of key management staff. This is often reported in discussions with senior management enterprises but is rarely if ever documented. It follows that there is a need to identify what is happening as a result of HIV and AIDS to those with higher level professional skills in both public and private sectors.¹⁵

As well as the direct effects of HIV/AIDS on production and sales there are also indirect effects that flow from the losses of key personnel in higher managerial and professional positions, together with those exercising important supervisory functions in respect of production. All of these personnel represent significant levels of formal investment in human capital, together with learning and experience that will have been acquired over many years (and which is impossible to replace through formal educational investment). The impact of HIV/AIDS will be especially severe as a result of losses in this category of labour.

One of the key functions that management is expected to perform is the management of change, whatever its origin, including adjustment required due to the effects of HIV and AIDS. A key management responsibility is establishing effective HIV prevention programmes, and the conditions for achieving this outcome is a proper and useful area for research. But much more important is the effectiveness or otherwise of management in adjusting overall economic activities: this includes staff allocation and the skill composition of newly recruited workers, changes in product mix and methods of production, revision of capital investment programmes, the development of appropriate technologies, and so on.

Whether or not management effectively adjusts production, sales and markets to the new dynamics both within and outside the enterprise will be the deciding factor. As things stand, little is known about what determines the effectiveness of management response. Are there, for example, varied responses to common effects of HIV/AIDS on enterprises in different countries or regions, and if so why is this? Of course one of the factors that will be operating to delay adjustment will be the losses of capacity in the key cadres caused by HIV/AIDS, so that the problem is made doubly difficult.

3. Impacts external to productive enterprises

Almost all of the research so far has been internal to affected enterprises and as noted above has been piecemeal and short-term. What is therefore needed is the development of research that will be more comprehensive both in terms of the productive activities that are covered and the areas that are looked at. All of this is important if we are to have a better grasp of the scale of the impact on productive activity, and the **determinants of adjustment within enterprises**. Such research needs to look at formal private and public sector activities as well as informal activities. The latter is an area where very little is actually known with certainty about how producers are managing the impact of AIDS on organizational capacity due to losses of human capital. This is especially true with respect to rural production of both food and cash crop production, where there has been more or less no programme of long-term research. Again there have been isolated pieces of research that have highlighted some of the effects of AIDS on rural production, but no coherent programme of ongoing research that would lead to policies and programmes to sustain production and livelihoods.

None of what is described here is taking place in isolation from policy and, perhaps in most cases, from market developments. In some senses this is the most puzzling aspect of the present state of knowledge about the impact of HIV/AIDS on productive activity. Almost all of the work undertaken so far has focused on developments **internal** to producers, and this distinctly limits the value of this research. For most producers are linked through markets – for what they sell and what they buy. So the markets are in part about products that are inputs to production, and about the sale of outputs, but they also include the market for factors of production. Some producers may be largely insulated from market developments although even so-called subsistence producers in fact have important market connections. More important perhaps are the ways in which integration in market processes affect both formal and informal sector producers, since the HIV epidemic will cause changes in market conditions for both inputs and outputs.

Thus an important area for research is therefore about the ways that integration in market processes affects producers, and the role that policy can play to ameliorate any adverse impact of the epidemic, the objective being as always to sustain production and livelihoods.

4. Impacts on the labour market

Of critical importance for a full assessment of the impact of HIV/AIDS on human capital is that which has its origin in labour market developments. **There is virtually no research on how labour markets have been affected by the HIV epidemic and thus what the impact has been on productive activity.** This is remarkable since the primary route through which the epidemic affects social and economic development is through changes in the ‘effective’ labour supply over time, i.e. changes in both the quantity and quality of labour as affected directly and indirectly by the HIV epidemic. This is a highly complex matter since the effects of HIV/AIDS on labour stocks over time is an area where little is known. But it is researchable and it is important. Thus it is evident that both output prices and profitability are changed by the impact on costs directly caused by increased labour morbidity and mortality due to HIV/AIDS, and although some of the research has looked at some of these identifiable costs, it has done so in a very limited way.

Perhaps more important for productive activity are changes in factor costs that arise from shifting supply functions for heterogeneous labour caused by HIV/AIDS. Thus relative

wages and other conditions of employment will change as a result of increasing scarcity of labour with appropriate skills and experience – at all levels, including those with higher professional skills and management. These trends must be having significant effects on recruitment and retention of labour for many enterprises in both the formal private and public sectors, with effects on the maintenance and cost of capacity that are largely unknown. It seems in many countries that posts in formal sector employment are left unfilled, with unknown effects on production, and in other situations staff are promoted to jobs that they are entirely untrained for, with again unknown consequences for the production of goods and services.

5. The response from workers' organizations

Whereas in most countries there are active trade unions, and federations of these, these organizations have generally not been extensively involved in discussions relating to HIV and AIDS. Their involvement in national responses has usually been limited, and only in a few countries have they been active in the development and implementation of policies and programmes. This is remarkable given the fact that union members and their families are directly affected by the epidemic through sickness and death. There are a range of issues from health and safety at work, discrimination in the workplace, access to appropriate health care for workers and dependents, pensions and other entitlements, and so on, that are central to the relationship between employers and workers. At the same time there are national issues that directly concern workers. Among the more important are appropriate policies relating to employment which ensure that the rights of workers are protected, in areas such as HIV testing for employment, non-discrimination in workplaces, access to appropriate health care including - where feasible - antiretroviral drug therapy, plus ensuring that labour legislation and codes relating to employment are consistent with workers' rights in a world increasingly characterized by HIV and AIDS.

Since labour unions are an important social as well as economic organization it is crucial that they be involved in the response both nationally and within productive enterprises, including active involvement in restructuring relationships. Unions need to be proactive in ensuring that their members' interests are protected, and that frameworks are developed that actively support affected workers and their families. They need to be much more actively involved in the development and implementation of the national and workplace response to the epidemic, including especially formulation of policies and delivery of programmes. The question for everyone is how best to bring this set of conditions into existence, so that unions play their appropriate role in the national and workplace response to the epidemic.

There are some countries where unions have been active, such as South Africa, and in part what is required is an assessment of their performance with the intention of guiding others about best practice - what can be learned from their experience that is transferable to other countries - so as to ensure that the unions play an effective role in the response to AIDS.

6. The role of Ministries of Labour

What is more surprising is the absence in most countries of the Ministry of Labour from the national response. This is more remarkable than the low level of involvement of unions in that governments have taken the lead in developing and implementing the national response to AIDS. However, in most countries the epidemic was initially seen as a health problem, with responsibility for policy and programme development lodged in the Ministry

of Health, with the inevitable result that the policies and programmes were primarily health-oriented. Even where organizational structures were established that were intended to involve non-health ministries, these were in most cases inoperative and ineffective. While there is now a greater willingness to involve other branches of government and of civil society in the response to AIDS, and to set up multisectoral programmes, it is still the case in most countries that the programmes are dominated by health-related concerns.

It is, therefore, rare to find Ministries of Labour actively involved in the national response to AIDS. Where they are active they seem to have defined their function as being mainly concerned with health and safety at work, including reviews of national legislation. In some countries they have also supported the development of a national policy framework for labour so as to ensure the existence of guidelines in areas such as HIV testing and non-discrimination in the workplace. These activities are very valuable where they exist and where there are effective implementation structures, but neither of these conditions are met in most countries. Furthermore, and perhaps more importantly, Ministries of Labour have not generally understood the threat that the epidemic has for the stock of human capital.

It is the loss of experienced, skilled and professional labour in many key sectors of the economy that poses the most direct threat to economic and social development, but Ministries of Labour do not seem to have grasped this point. Failure in understanding has led to inactivity with respect to those activities that relate to human resource planning, with the result that no one has seen it as their responsibility to ensure that human capital is as far as possible sustained. The mobilization of Ministries of Labour so that they have a deeper understanding of their responsibilities in a world of AIDS remains one of the key tasks that need to be undertaken by agencies such as the ILO.¹⁶

V. CONCLUSIONS

What is required is a re-examination of many of the channels through which changes in the stock of human capital affect production and livelihoods. It is unfortunate that much of the research so far undertaken has been of limited value: this in large part arises from the fact that researchers with expertise in production economics and in industrial relations seem scarcely to have been involved in its design and implementation.

Little of the research has focused on the factors that are necessary to sustain production and employment under conditions of HIV/AIDS. To do so, means looking again at the diversity of production conditions in different sectors and developing techniques of largely qualitative analysis for identifying what is happening to productive activities and employment. It means also understanding that production does not occur in a vacuum but that producers are linked through factor and product markets which are themselves adjusting to the impact of AIDS. In other words, research needs to be both more complex and more dynamic in order to make more sense of what is going on.

Organizationally what is required is a greater involvement of the key social partners in the response to AIDS. As noted above there is still a long way to go before a genuine and effective alliance can be demonstrated to have taken place. Governments in most countries still give very low priority to HIV/AIDS through their actions, and while they often speak a rhetoric of 'AIDS as a development issue' it is clear that understanding of the structural causes and consequences of the epidemic is generally missing.

The efforts of most governments still seem to be concentrated on health issues, with the involvement of other key ministries more or less absent. Not least in the case of Ministries of Labour, who seem at best to have a role which is marginal to the national response. Similarly the labour unions have generally not been mobilized in the response to AIDS within the institutional structures where they are an important partner. Finally, the other social partner – employers in both the private and public sectors – seem either to have been inactive as a group or have again perceived only a narrow role for themselves in the response. Yet they have a crucial role to play in assessing impact and maintaining productive capacity, not least through their actions to sustain stocks of human capital.

The key question is how to ensure that each of the social partners is activated in ways that maximize their contribution to the response to the epidemic within frameworks that reflect an understanding of the threat that the epidemic poses for social and economic development. In moving forward it is essential that the stock of knowledge relating to the issues be expanded and consolidated, and that the social capital thus generated be used in moving forward policies and programmes within the region. Steps towards achieving these objectives are outlined briefly at Annex 1.

The losses of human capital will not be confined to those with the greatest level of education and training so that the costs of the epidemic will be much greater than those normally estimated by economists. Since the system requires many levels and types of skills and capacities – both of men and women – it becomes even more necessary to ensure that mechanisms are strengthened to supply the levels and mix of skills that are needed for development. This is the policy problem: to ensure that skills are created as appropriate and labour supplies maintained as the HIV epidemic threatens to erode them. The problem is compounded by the fact that the epidemic systematically undermines the capacity to achieve these objectives, at precisely the time that labour supplies are most threatened. This is the challenge facing developing African economies – one where there is no simple solution, but

one where there are actions that can be undertaken to sustain human capital that will over time mitigate the impact on social and economic development in sub-Saharan Africa.

It is becoming clearer that the actions needed to sustain development entail a radical break with the past. In matters relating to human capital, policies and programmes are needed that re-consider current policies and adapt these to the new reality of a world characterized by AIDS. To give a few examples:

- The objectives of the education system need to be revisited and redefined, with new tasks set for formal educational organizations that reflect the changing needs of the economy: this will mean more inclusive and less hierarchical systems with fewer resources for higher education and more for primary and secondary schooling.
- The same is true for health, where losses of key human resources due to the epidemic as high as 40 per cent of staff in the some countries will have to lead to a redefinition of attainable tasks, together with a realignment of health training that matches a new set of health objectives and different mechanisms of delivery.
- In terms of rural development it is clear that many traditional systems of social learning that pass skills and knowledge from generation to generation are no longer functioning because of the increasing mortality of parents in their prime working ages. In this case there will need to be alternative ways of ensuring that skills are made available to children, together with the resources to enable production to be maintained.¹⁷
- New technologies need to be developed that will substitute for the increasing scarcity of labour – both the skilled and professional and the supposedly ‘unskilled’. The search for more appropriate technology will need to be undertaken as a planned activity rather than being left entirely to the endogenous forces of product and capital markets which are not only highly imperfect but much too slow in adapting to changing conditions.

With the search for appropriate technologies there will have to be a redefining of the output objectives of the country – to ensure that key services and outputs are maintained and that access is ensured for all those in need. In other words re-examining development goals and ensuring that these reflect the objective of sustainable development.

Annex I

How to respond – a proposal for maintaining the stock of human capital

It is proposed to undertake in a collaborative way with local institutions in sub-Saharan Africa a series of applied and action oriented studies. There will also be associated follow-up to ensure that policies and programmes are developed and implemented that are effective in responding to the epidemic. The objective of these activities is to lead to practical proposals that inform policies and programmes – it is not to undertake academic and curiosity driven research. The need in SSA is for information as a basis for subsequent activities that will enable countries to maintain productive capacity in the face of the HIV epidemic. **The maintenance of human capital being the overriding objective, a multi-stage programme of action should be undertaken which will do the following:**

Phase 1

Undertake a rapid assessment of the situation in a selected number of high-prevalence countries in SSA with respect to the losses of human capital, with a concentration on losses of those with higher level professional and managerial skills in both the private and public sectors.

This would include assessing the implications of these trends for the functioning of the economic, social and political system – both in terms of the direct impact on particular productive sectors and on the systemic effects through the inter-dependence of the different parts (e.g. how do losses of skilled labour in transport affect other sectors?). The assessment would also describe and evaluate in broad terms how sectors are responding to the effects of labour losses, and with what success. The assessment would review policies at the various levels in regard to issues of maintaining the stock of human capital and its productive use.

Phase 2

Undertake a rapid assessment in the selected countries of the effects of HIV and AIDS on the capacity of key tertiary educational and training institutions.

This would include evaluating the impact of the epidemic on the capacity of such institutions to undertake their main educational and training activities, given both their current and predicted losses of human resources due to HIV and AIDS, and assessing the institutional policies and programmes of such organizations. The assessment would make recommendations as to the policies and programmes that are needed to ensure that these institutions can maintain their capacity, and also serve the changing needs of the country.

Phase 3

In the light of the reports and conclusions of Phases 1 and 2, develop appropriate policies and programmes to address the key findings.

Governments and others would be assisted in the implementation of such policies and programmes, and with the monitoring and evaluation of activities. Mechanisms would be developed for the dissemination of lessons learned to other countries in the region, and to support proposals for the extension of policies and programmes that are proven to be effective.

Annex II

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