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Section 9 Appendices

Appendix 1: Costing and coverage estimations

This appendix summarizes the procedures used to estimate HIV and AIDS spending under the scenarios that support the project *AIDS in Africa: Three scenarios to 2025*. For more details on each of the 26 interventions analysed, related documents are available¹. The text summarizes the approaches taken for each of the areas of intervention: prevention; care and treatment; and orphans and vulnerable children support.

Prevention

The resources required for an expanded response were estimated for each intervention as the number of people in need of the service multiplied by the coverage (the percentage of the population receiving the service) multiplied by the unit cost (the cost to provide an individual service).

In the analyses for the project, population numbers and unit costs for each of the sub-regions of Africa were not varied by scenario. Only coverage rates vary between scenarios. Basically, the analyses assumed rapid scale-up to full or nearly full coverage under 'Times of transition'. Scale-up under 'Traps and legacies' is much slower and less complete: per capita coverage rates do not increase, programmes expand only at the rate of population growth. Expansion of coverage under 'Tough choices' is at the mean level of coverage each year that lies between 'Traps and legacies' and 'Times of transition'. The prevention activities in this analysis consist of 18 specific interventions, detailed below.

Population sizes

The population in need is different for each intervention. For some services the population in need is a segment of the general population, such as school children or pregnant women. These populations are calculated from demographic estimates and projections from United Nations Population Division (2003) *World population prospects: The 2002 revision*. These data are supplemented with social and economic indicators, such as the percentage of school age children in school and the percentage of pregnant women accessing antenatal care (World Bank (2004) *World development indicators*).

The sizes of some special populations (sex workers, men who have sex with men, injecting drug users, prisoners, truck drivers, and others) derive from recommendations made by country specialists to a series of UNAIDS regional workshops on costing of HIV and AIDS programmes. The country HIV prevalence, HIV incidence, and AIDS mortality estimates and projections use the end of 2003 latest available data from UNAIDS/WHO (UNAIDS, 2004 *global report on the AIDS epidemic*).

Coverage

The percentage of the population in need of a service that receives it is estimated separately for each intervention. Information on coverage levels in 2003 is available for most countries from a global survey of coverage of essential interventions reported in *Coverage of selected services for HIV/AIDS prevention, care and support in*

low and middle income countries in 2003, the Futures Group/POLICY Project, June 2004, available at <http://www.futuresgroup.com/>.

Coverage targets for 2007 for each intervention under the 'Times of transition' scenario are:

- 100% of those needing the service by 2007 in high-prevalence countries for mass-media, education, post exposure prophylaxis, and safe medical injections;
- 75% for harm reduction;
- 70% for prevention of mother-to-child transmission;
- 60% for condom use when at least one partner may have been exposed to HIV; and
- 50% for workplace interventions, voluntary counselling and testing, and out-of-school youth.

In the case of universal precautions in health care settings (i.e., gloves, gowns, etc.) and safe medical injections only, the costs in those countries with an adult HIV prevalence of over 1% are included as an HIV-related cost for the purpose of this analysis. The country-specific costs for safe medical injections are estimated from previously published WHO estimates.

Resources required for orphan support are estimated for orphanage support, community support, and school fees. Targets for 2007 are orphanage support for 5% of orphans, regardless of country HIV prevalence level. Targets for community assistance and school fee support vary by prevalence setting, beginning at 5% of orphans in low prevalence settings and rising to 20% in high prevalence settings.

As described above, coverage for the 'Traps and legacies' scenario is assumed to be at current levels, with provision expanding only at the rate of population growth, and 'Tough choices' is at the annual mean level between 'Times of transition' and 'Traps and legacies'.

The 18 interventions included, and the coverage and other assumptions associated with them, are as follows.

General population interventions

- Mass media²
- Voluntary counselling and testing³.

Vulnerable populations

- Youth in school⁴
- Youth out of school⁵
- Sex workers⁶
- Men who have sex with men
- Injecting drug users
- Informal sector employees
- Special populations such as prisoners, truck drivers, and uniformed services personnel⁷
- People living with HIV⁸

Service delivery

- Condom distribution: public sector⁹
- Condom social marketing
- Blood safety¹⁰
- STI treatment¹¹
- Prevention of mother-to-child transmission¹²
- Post-exposure prophylaxis¹³
- Safe medical injections¹⁴
- Universal precautions¹⁵.

Unit costs

For most interventions, the unit costs are taken from information provided by country specialists in the series of workshops noted above. These unit costs are used for all years. They could change over time as programmes expand. For example, unit costs might decline as coverage expands, due to economies of scale or new ways of delivering services. However, this seems unlikely for most prevention services. Some services are already provided on a national scale, such as school-based AIDS education, condom provision, mass-media, and blood safety. Some unit costs might rise as populations that are more difficult to reach begin to be covered. Finally, other costs are based on outreach models (such as sex workers programmes) or patient visits (such as STI treatment) where there is little reason to expect unit costs to change with scale. Newer programmes, such as voluntary counselling and testing (VCT) and prevention of mother-to-child transmission (PMTCT), could become more or less expensive as service providers learn how to best deliver services.

Unit costs for the provision of orphan support are also derived from country-level workshops and general literature, where available. When these specific costs are not available, regional averages are used.

Detailed descriptions of calculations for each intervention are given on the companion CD-ROM, available from *UNAIDS*.

Care and treatment

Under 'Times of transition', a high level of HIV treatment coverage is achieved, reaching 60% of those who need antiretroviral therapy by 2013, and over 70% by 2025. Care and treatment coverage is far lower under 'Traps and legacies'; coverage for these interventions under 'Tough Choices' is intermediate between the other two.

The cost estimation methodology is presented in detail by Bertozzi et al¹⁶.

Resources required for care and treatment are estimated for the following five interventions:

- Palliative care¹⁷

- Diagnosis of HIV infection (HIV testing)¹⁸
- Treatment for opportunistic infections¹⁹
- Prophylaxis for opportunistic infections²⁰
- Highly-active antiretroviral therapy (HAART), which includes:
 - Laboratory services for monitoring treatment success/failure²¹
 - Laboratory services for monitoring toxicity
 - Nutritional support for malnourished patients
 - Drug costs²².

The resources required for each intervention are estimated by multiplying:

- The total population in need; by
- The coverage (percentage of the population in need that receives the service); by
- The unit cost of providing the service.

Population in need

The *population in need* is defined as those HIV-positive individuals who show symptoms of AIDS. As there is not an accurate registry of this, the number is estimated based on the assumption that, in the absence of treatment with antiretroviral drugs, an individual transitioning from HIV to AIDS in the developing world has a life expectancy of 2 years. The WHO/UNAIDS country-specific epidemiological models generate estimates of the annual incidence of AIDS (in the absence of antiretroviral drug treatment) and those estimates were used here.

Coverage rates

The initial coverage rates for HAART, prophylaxis for opportunist infections, and testing for HIV were taken from AIDS-related services coverage data published by WHO, when available²³. For those countries for which all data were not available, the missing values were imputed based on the available country data and the data from the other countries. For the countries for which no coverage data were available, the regional average was used.

For palliative care, the initial coverage is estimated as the median of the coverage of a set of basic health services (antenatal care, attended deliveries, DPT3 immunization coverage, and coverage of directly observed therapy for tuberculosis [DOTS]). For treatment of opportunistic infections, the initial coverage is estimated as a fraction of the palliative care coverage.

For coverage rates in subsequent years under 'Times of transition', the initial coverage rate was increased using a growth rate²⁴ that is a function of the country's wealth, adjusted by the current burden of HIV (HIV prevalence) and the country's previously demonstrated ability to increase health services coverage (estimated as the difference between the

observed immunization coverage and the coverage predicted by the country's wealth). The growth rate adjusts the coverage for each year, adding a percentage (the growth rate) of the uncovered population. Using this methodology, coverage rates per intervention per country per year were estimated. To maintain consistency, a constraint was imposed that the HAART coverage rate \leq opportunistic infection (OI) prophylaxis coverage rate \leq OI treatment coverage rate \leq palliative care coverage rate.

Per capita intervention costs

Per capita intervention costs use unit costs for interventions that have been estimated in the literature, adjusted by recent information on new prices negotiated with providers of drugs and diagnostics, in particular for HAART treatment and laboratory monitoring.

Orphan care

A large number of children have been orphaned in recent years. Many of these children are cared for by family members, but a significant number require some sort of public assistance. Some children may be placed in orphanages while others may be offered assistance in the communities where they live. This analysis considers three types of orphan care: orphanage care, community care, and subsidies for school attendance. The number of orphans is estimated by UNAIDS for each country on the basis of the estimated number and pattern of adult deaths. An orphan is considered to be a child under the age of 18 who has lost one or both parents due to AIDS or other causes.

In countries with high levels of HIV prevalence, children orphaned by AIDS account for a significant proportion of all orphans, while in countries with low levels of HIV prevalence most orphaned children will have been orphaned due to other causes. As with safe injection and universal precautions, the costs of orphan care are included in this analysis only for countries with national adult HIV prevalence of 1% or greater.

Policy, management, administration, research, evaluation, and monitoring

There are many support functions required to implement an expanded response that are not related directly to the number of people receiving specific services. The cost of these support functions is estimated as 5% of total requirements for prevention, care and treatment, and orphan support.

Training and infrastructure

Additional resources may be required for training and infrastructure. For example, training for teachers and system strengthening for condom logistics and PMTCT programmes are explicitly included in the cost of prevention. For other interventions (such as VCT, STI treatment, and outreach programmes for vulnerable populations) the costs of training and facilities may be included in the unit cost. The costs of training for health care workers to provide advanced treatment are not explicitly included, but should be small compared to the overall costs of treatment.

Two types of training and infrastructure costs are not included. One is degree training for health personnel, such as medical school for those training to become physicians and nursing school for those training to become nurses. Such training, if started now, would have little effect on a country's ability to meet the coverage targets by 2010, but would be crucial to achieve longer-term goals. Similarly, these estimates do not include the costs of expanding infrastructure so that a larger percentage of the population has access to schools and health facilities. Such expansion would take too long to have much of an impact in the next four years, but would be crucial to expanding services in the longer term.

¹ For an intermediate-length treatment of the rapid scale-up of interventions through 2007, see the Futures Group and UNAIDS, Methods: Prevention, Care and Treatment, and Orphan Support, available through j.stover@tfgi.com.

² The number of national campaigns needed per year multiplied by the cost per campaign.

³ VCT services (not including diagnostic testing that may occur as part of care and treatment services) assuming annual testing for the highest risk populations (sex workers, MSM, and IDU in countries where HIV prevalence in these groups is 5% or greater); testing every 10, 7, 3, or 2 years depending on the level of HIV prevalence in the country for medium-risk populations (sex workers, MSM and IDU in countries where HIV prevalence in these groups is less than 5% plus all men and women with multiple sex partners) and testing once at age 20 for people in populations at lower risk.

⁴ The number of youth in primary and secondary school is estimated as the population aged 6–11 and 12–15 multiplied by the primary and secondary gross enrolment rate (World Bank, *World development indicators*). The number of teachers required is estimated by dividing the number of students by the average number of students per teacher. The number of teachers needing training in a given year is the total number of primary and secondary school teachers multiplied by the coverage and divided by the frequency of training. It is assumed that teachers need to be trained or receive refresher training every three years.

⁵ The number of youth out of school is the difference between the total number of youth aged 6–11 and 12–15 minus those in school. These youth need to be reached through peer counselling outreach programs.

⁶ For all vulnerable populations including sex workers, men who have sex with men, and injecting drug users, the number of people in the group is multiplied by the coverage to determine the number receiving services and by the unit cost to determine the resources required. For sex workers and men who have sex with men, we also calculate the number of condoms required and the cost of providing those condoms.

⁷ Identified by country specialists for each country. No estimates are made for countries not providing data on special populations.

⁸ Only for those who are not in treatment, estimated as the number newly identified as HIV-positive through VCT (the number of people tested multiplied by the prevalence rate) multiplied by the average time from VCT until treatment is required (assumed to be three years).

⁹ Condoms may be provided through public sector distribution programmes or through condom social marketing. The need for condoms is the total number of high-risk sex acts. High-risk sex acts are defined as those involving sex workers and clients, men who have sex with men, and casual partnerships, plus all marital acts where one or both partners also have outside partners. Data on men and women with multiple partners are from MEASURE Demographic and Health Surveys (<http://www.measuredhs.org>) and the UNICEF Multiple Indicator Cluster Survey (MICS) (<http://www.childinfo.org>) surveys. The need for condoms is increased by 10% to account for wastage and spoilage. Female condoms are assumed to account for 10% of condoms distributed through social marketing and 5% of condoms used in commercial sex.

¹⁰ The number of units of blood needing screening is based on per capita transfusion rates from the WHO reference blood safety database.

¹¹ The need for STI treatment consists of men and women with symptomatic STIs and access to health care services plus the number of syphilis cases among women that are detected through antenatal screening. Access to health care in 2003 is defined as the median of four indicators: the percentage of pregnant women who had some antenatal care, the percentage of births attended by health staff, childhood immunization (the percentage of children under the age of 24 months receiving a full course of immunizations), and the percentage of the population with access to Directly Observed Therapy Short-Course (DOTS) for tuberculosis treatment (WHO). Data are from the World Bank, *World development indicators*, and WHO, *Global tuberculosis control: Surveillance, planning, financing, WHO report 2003*. Access increases in the future based on the ability of a country to expand its health system rapidly given political will and the necessary resources. For coverage rates in subsequent years the initial coverage rate is increased using a growth rate that is a function of the country's wealth, adjusted by the current burden of HIV (HIV prevalence) and the country's previously demonstrated ability to increase health services coverage (estimated as the difference between the observed immunization coverage and the coverage predicted by the country's wealth). The growth rate adjusts the coverage for each year adding to the previous coverage a percentage (the growth rate) of the uncovered population (100% = the coverage rate in the previous year). Using this methodology, coverage rates per intervention per country per year are estimated.

¹² Resources needed for PMTCT programmes include the costs of counselling and testing for pregnant women, the costs of strengthening antenatal and delivery services to provide PMTCT, the costs of antiretroviral therapy for those women who are HIV-positive, and the costs of milk formula for those women who choose not to breastfeed. The programme used here is based on current WHO recommendations which include counselling and testing for pregnant women, antiretroviral therapy for HIV-positive women (daily doses of AZT starting at 28 weeks plus a single dose of Nevirapine for the mother at the onset of labour and a single dose for the infant within 48 hours of birth), formula for those who choose not to breastfeed, and family planning counselling to allow couples to achieve their future fertility intentions. Coverage rates are applied only to women attending antenatal services to determine the number of women receiving counselling and testing. The estimated costs of system strengthening are based on the number of HIV-positive women. The acceptance of family planning is based on unmet demand for family planning as measured by various national surveys. Lack of availability is only one reason that couples have an unmet need for family planning. Therefore, it is assumed that 25% of those attending PMTCT services with an unmet need for family planning would accept it if family planning were easily available at PMTCT sites.

¹³ Assuming every country would use at least 50 kits in a year plus an additional kit for every million population.

14 Estimates of the number of unsafe injections and the costs of making all injections safe have been prepared by WHO (Dziekan G, et al (2003) The cost-effectiveness of policies for the safe and appropriate use of injection in health care settings, *Bulletin of the World Health Organization*, 81(4):277–285). Unsafe injections are estimated as total injections multiplied by the regional estimates of the proportion that are unsafe. The total number of injections is estimated from the regional number of injections per capita (including childhood immunizations) and the total population of each country.

15 Calculated as an annual cost per hospital bed. Data on the number of hospital beds per capita are from the World Bank, *World development indicators*. As with safe injections, the costs of universal precautions are only included for those countries with national adult prevalence of 1% or more.

16 Bertozzi S, et al (2004) Estimating resource needs for HIV/AIDS health care services in low-income and middle-income countries. *Health Policy* 69(2):189–200.

17 Palliative care is assumed to occur in the last two years of life. In the event that the patient has access to antiretroviral drugs, palliative treatment is postponed until antiretroviral treatment fails.

18 Initial and confirmatory testing performed when there is clinical suspicion of HIV infection.

19 The cost of treating opportunistic infections over the lifetime of an HIV-positive adult. As with palliative care, this is assumed to occur during the last two years of life. HAART is not assumed to change the overall cost of OI treatment, but rather to postpone it for the incremental survival time conferred by antiretroviral therapy. The cost of treatment postponed is discounted with the result that the net present value of OI treatment for a patient newly enrolling in HAART is lower than for a patient who will not receive HAART.

20 Both the drug costs and the service delivery costs. Half of the population on HAART is assumed to have a sufficiently good immunological response to therapy to be able to discontinue OI prophylaxis.

21 Assume cost reductions for CD4 and viral load tests to the level negotiated with the diagnostics manufacturers by PAHO for Latin America.

22 Differential pricing for antiretroviral drugs with the minimum price applying to all low-income countries, and the maximum price in the wealthiest middle-income country, with a linear increase in price for the other middle-income countries in proportion to their GDP per capita. In addition, the minimum price was applied to all middle-income countries with an HIV prevalence in excess of 5% (i.e. South Africa and Botswana). Cost of care for children living with HIV is estimated to be 70% of the country-specific adult cost.

23 WHO (2002) *Coverage of selected health services for HIV/AIDS prevention and care in less developed countries in 2001*. Geneva.

24 Even without major changes in infrastructure, access to HIV- and AIDS-related health services can grow within the current constraints. The same installations and personnel used to provide general health care can be used for AIDS-related disease care. To model the increase in coverage within the current constraints, a growth rate was estimated for each country.

Appendix 2: Modelling assumptions

Data

- HIV and AIDS programme data were calculated and supplied by the Futures Group (see **Appendix 1** for assumptions on programme components). It was assumed that:
 - Approximately 80% of the programme costs would be likely to fall under national health budgets, while the remaining 20% would be split between other ministries, with education taking a large share.
 - The proposed HIV and AIDS programme costs would be additional to other national health commitments and financial demands.
- Health spending data drew on the WHO *World health report* (2004 report containing 2001 data: available at <http://www.who.int/>) providing information for:
 - Total expenditure on health as a percentage of GDP;
 - General government expenditure on health as a percentage of total expenditure on health;
 - Private expenditure on health as a percentage of total expenditure on health;
 - External resources for health as a percentage of total expenditure on health.
- Economic data (GDP) for 2001 was taken from the World Bank *World development indicators* and used to calculate monetary per capita amounts for health sector expenditures (available at <http://www.worldbank.org/>).
 - Economic growth—real gross domestic product (GDP) growth—has been calculated and expressed without consideration of inflation, exchange rate fluctuations, etc. The figures express aggregate economic growth, not per capita growth.
- Population growth data was based on the medium variant projection of the UN Population Division (see *World population prospects: the 2002 revision*, available at <http://esa.un.org/>).
 - Population data varies between the scenarios, reflecting the impact of proposed HIV and AIDS programmes and the epidemic's effect on the number of deaths and births.
 - 'Traps and legacies' shows the lowest estimated relative population due to high AIDS death rates and fewer births. 'Times of transition' has the highest population, since more deaths are prevented and more births registered. The population numbers in 'Tough choices' are between those of the other two scenarios—higher death rates than 'Times of transition' are balanced by successful efforts at prevention.
- From existing data, it is not clear how HIV- and AIDS-associated health expenses will be divided between government, external, and private contributors, as well as out-of-pocket contributions, although some regional and country-specific data can be employed for making assumptions.
 - Data from southern Africa¹ (excluding the Republic of South Africa) suggests that 10–15% of total expenditure on HIV and AIDS comes from core government spending, with the rest from official development assistance (ODA) sources. Estimations from work in Senegal² suggest that the population's contribution to total health spending is approximately 10%, while data from Rwanda suggests that over 90% of spending on HIV and AIDS is private³.
 - The working assumption for this model was that, in aggregate terms, 'Tough choices' and 'Times of transition' would both see 10% of HIV and AIDS programme spending coming from private contributors, while in 'Traps and legacies' it would be higher—around 20%.
- In all three scenarios, in aggregate terms, ODA is assumed to cover 80% of HIV and AIDS programme costs in 2003 and gradually fall until 2025.
 - In 'Tough choices' and 'Times of transition', national health budgets grow, sometimes as a result of government budgets increasing, and ODA is gradually reduced. Because the proposed HIV and AIDS programme costs are additional to basic health expenditures, ODA continues to play a significant role in financing the general health sector, as well as HIV- and AIDS-specific programming.
 - In 'Traps and legacies', the sluggish economies fail to grow sufficiently to continue taking over an increasing share of the HIV and AIDS programme costs. ODA and private expenditures continue to be the main source for funding.

Handling the data and terminology

- The simple partial equilibrium model developed for this project is not intended to be exhaustive, and does not reach the complexity and comprehensiveness achieved with a general equilibrium model.
- The numbers described in each scenario are the result of linear extrapolations of trends within that scenario. They are to be taken not as predictions, but as one, plausible, attempt to model and explain the cost of HIV and AIDS programmes in each scenario.
- All resulting US dollar (US\$) amounts are expressed in terms of 2002 dollars, but based on 2001 GDP data.

Figure 96 Modelling assumptions and their impact

| Variable | Baseline | Assumptions and impact | | |
|---|--|---|--|--|
| | | Tough choices: Africa takes a stand | Traps and legacies: The whirlpool | Times of transition: Africa overcomes |
| Economic growth | Per capita GDP has declined by around 20% to around US\$ 460 per head in SSA ^a since 1990. It is less in W and E Africa and more in Central Africa. | 2% mean GDP growth per annum, not taking into account inflation, population growth, etc. GDP grows by 60%. 10% increase in per capita income in NA and SA, stagnation in per capita incomes in WCA, and loss of 10% in EA due to sustained population growth. | 1.5% mean GDP growth per annum, not taking into account inflation, population growth, etc. GDP increases by just under 40%. Stagnation in per capita income in NA and SA, nearly 20% per capita income loss in WCA and EA due to strong population growth. | 4% real per capita growth per annum, not taking into account inflation, population growth, etc. GDP grows by a factor of 2.5. Per capita income grows by 70% in NA and SA and by about 40% in WCA and EA. |
| Growth in public expenditure | Currently 30% of GDP in EA, 20% in WCA, 24% in SA and 19% in NA. | 0.75% annual increase in share of GDP. (Public expenditure increases through public sector-led growth and some increases in aid.) 2025 levels: EA 36.4% of GDP; WCA 23.9%; SA 28.5%; NA 22.5%. | Stagnation in share of GDP going to budget. (Public expenditure remains a constant proportion of GDP.) | 1% annual increase in share of GDP ^b in SA and WCA, 0.5% increase in EA, and 1.5% increase in NA until 2014, then 0.5%. (Public expenditure increases through increased tax base, more aid, and more relaxed fiscal policy.) 2025 levels: EA: 33.9% of GDP, WCA 24.8%; SA 29.5%; NA 22.1%. |
| Growth in domestically-financed public expenditure on health | Public expenditure on health baseline as a percentage of government budget (aggregates): EA: 6.55% WCA: 9.46% SA: 10.16% NA 8.9%. | Share increases by 1% per annum from 2014 until health budget reaches 13.2% of government budget. | Share increases by 0.5% per year. Share of public expenditure to health increases to following percentage of public expenditure by 2025: EA: 9.9% WCA: 10.6% SA: 11.3% NA: 9.9%. | Share of public expenditure to health increases to 15% of public expenditure by increasing shares as follows: EA: 1% until 2014, then 4% WCA: 1% until 2014, then 3.5% SA: 1% until 2014, then 3% NA: 1% until 2014, then 3%. |
| Growth in externally financed public expenditure on health | External aid as a proportion of public health expenditure (aggregates): EA: 51% WCA: 46% SA: 44% NA: 12%. | Initial increase then decline for HIV- and AIDS-specific programmes. Gradual build-up post-2015 for interventions additional to HIV, e.g. malaria, childhood diseases, TB, etc. | Erratic. Initial growth and then decline. Increase in run-up to 2015 then decline. Proportions of contributions in terms of percentage of GDP constant but decrease in US\$ per capita terms as GDP fails to keep pace with population growth. | Rapid increase to 2015, then levels are maintained. |

^aNote: EA: East Africa; WCA: West and Central Africa; SA: Southern Africa; NA: North Africa; SSA: sub-Saharan Africa.

^b1% of baseline, not 1% of GDP.

Source: UNAIDS AIDS in Africa Scenarios Project.

Scenario and topic-specific assumptions are indicated in the table above.

¹ Martin HG (2003) *A comparative analysis of the financing of HIV/AIDS programmes in Botswana, Lesotho, Mozambique, South Africa, Swaziland and Zimbabwe*. Research Programme on the Social

Aspects of HIV/AIDS and Health. Cape Town, Human Sciences Research Council.

² Vinard P, et al (2003) Analysis of HIV/AIDS expenditures in Senegal: from pilot project to national program. In: Agence Nationale de Recherches sur le Sida (2003) *Economics of AIDS and access to HIV/AIDS care in developing countries, issues and*

challenge, pp.459–482. Paris, France, ANRS.

³ Schneider P, et al (2000) *Rwanda national health accounts 1998*. Technical Report No. 53, Partnerships for Health Reform Project. Bethesda, MD, Abt Associates Inc.

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Appendix 4: Glossary

Acquired immunodeficiency syndrome (AIDS)

AIDS is a fatal disease caused by HIV, the human immunodeficiency virus. HIV destroys the body's ability to fight off infection and disease, which can ultimately lead to death. Currently, medication can slow down replication of the virus, but it does not cure AIDS.

Adherence

The extent to which a patient takes his/her medication according to the prescribed schedule (also referred to as 'compliance').

Antiretroviral therapy (ART)

A treatment that uses antiretroviral drugs to suppress viral replication and improve symptoms. Effective antiretroviral therapy requires the simultaneous use of three or four antiretroviral drugs as specified in the WHO 'Guidelines for a public health approach, scaling up antiretroviral therapy in resource-limited settings' (June 2002). These guidelines (available at <http://www.who.int/>) are intended to support and facilitate proper management and scale-up of antiretroviral therapy, providing recommended first and second line treatment for adults and for children, reasons for changing ART, monitoring patients, the side-effects of ART, and specific recommendations for certain patient subgroups.

ARV

Antiretroviral (drug).

Epidemic

A disease that spreads rapidly through a demographic segment of the human population, such as everyone in a given geographic area; a military base, or similar population unit; or everyone of a certain age or sex, such as the children or women of a region. Epidemic diseases can be spread from person to person or from a contaminated source such as food or water.

Epidemiology

The branch of medical science that deals with the study of incidence, distribution and control of a disease in a population.

Faith-based organization (FBO)

A term to describe organizations such as churches and other religious organizations.

Gross domestic product (GDP)

The value of all final goods and services produced in a country in one year (see also gross national income). GDP can be measured by adding up all of an economy's incomes—wages, interest,

profits, and rents—or expenditures—consumption, investment, government purchases, and net exports (exports minus imports). Both results should be the same because one person's expenditure is always another person's income, so the sum of all incomes must equal the sum of all expenditures.

Gross national income (GNI)

Previously known as 'gross national product', 'gross national income' comprises the total value of goods and services produced within a country (i.e., its 'gross domestic product'), together with the total income received from other countries (notably interest and dividends), less any similar payments made to other countries.

Highly active antiretroviral therapy (HAART)

The name given to treatment regimens recommended by leading HIV experts to aggressively suppress viral replication and progress of HIV disease. More recently, drugs have been developed to prevent the virus from entering the cell. The usual HAART regimen combines three or more different drugs, which may be combined into a single 'fixed-dose combination' (FDC) formula. These treatment regimens have been shown to reduce the amount of virus so that it becomes undetectable in a patient's blood (although they cannot yet completely remove the virus from the body and are thus not a 'cure' for HIV).

HIV incidence

HIV incidence (sometimes referred to as cumulative incidence) is the proportion of people who have become infected with HIV during a specified period of time. UNAIDS normally refers to the number of people (of all ages) or children (0–14) who have become infected during the past year.

HIV-infected

As distinct from HIV-positive (which can sometimes be a false positive test result, especially in infants of up to 18 months of age), the term HIV-infected is usually used to indicate that evidence of HIV has been found via a blood or tissue test.

HIV prevalence

Usually given as a percentage, HIV prevalence quantifies the proportion of individuals in a population who have HIV at a specific point in time. UNAIDS normally reports HIV prevalence among adults, aged 15–49.

Human immunodeficiency virus (HIV)

The virus that weakens the immune system, ultimately leading to AIDS. Since HIV means

'human immunodeficiency virus', it is redundant to refer to the *HIV virus*.

Opportunistic infections

Illnesses caused by various organisms, some of which usually do not cause disease in persons with healthy immune systems. Persons living with advanced HIV infection may suffer opportunistic infections of the lungs, brain, eyes, and other organs.

Orphans

In the context of HIV and AIDS, it is preferable to say 'children orphaned by AIDS' or 'orphans and other children made vulnerable by HIV and AIDS'. In this publication, the term is used to describe a child that has lost either one or both parents.

Official development assistance (ODA)

In the context of this book, the following definition applies:

Grants or loans to countries and territories on Part I of the Development Assistance Committee List of Aid Recipients (developing countries) which are: (a) undertaken by the official sector; (b) with promotion of economic development and welfare as the main objective; (c) at concessional financial terms [if a loan, having a grant element of at least 25%]. In addition to financial flows, technical cooperation is included in aid. Grants, loans, and credits for military purposes are excluded. Transfer payments to private individuals (e.g., pensions, reparations or insurance payouts) are in general not counted.

Pandemic

A disease prevalent throughout an entire country, continent, or the whole world. Preferred usage is to write pandemic when referring to global disease and epidemic at country or regional level. See EPIDEMIC.

Quality-adjusted life year (QALY)

A quality-adjusted life-year (QALY) takes into account both the quantity and the quality of life gained through health care interventions. It is the arithmetic product of life expectancy and a measure of the quality of the remaining life-years. If a person's life is shortened or affected by ill health (such as AIDS) that could be avoided or ameliorated through adequate treatment, the QALY provides a certain measure of the value of the treatment in terms of improved years of life.

Scenarios

A scenario is a story that describes a possible future. It identifies some significant events, the main actors and their motivations, and conveys how the world functions. Scenarios always come in sets of

more than one to express the uncertainty of the future. Scenarios are not stories about what should happen, but describe what might happen. They are not predictions, projections, or extrapolations of the present. Good scenarios are plausible, internally consistent, and both relevant and challenging. A set of scenarios is a tool that can be used to improve decision-making by confronting assumptions, recognising uncertainty, widening perspectives, and addressing key dilemmas and conflicts.

Surveillance

The ongoing and systematic collection, analysis, and interpretation of data about a disease or health condition. The diagnostic study of blood samples for the purpose of surveillance is called serosurveillance.

Vaccine

A substance that contains antigenic components from an infectious organism. By stimulating an immune response—but not the disease—it protects against subsequent infection by that organism. There can be preventive vaccines (e.g. measles or mumps) as well as therapeutic (treatment) vaccines.

Old usages and current preferred usages

| Old | Preferred |
|------------------------------|----------------------------------|
| Developing countries | Low- or middle-income countries |
| Fight against AIDS | Response to AIDS |
| High(er) risk groups | Key populations at higher risk |
| HIV/AIDS | HIV and AIDS |
| HIV/AIDS | HIV disease or AIDS |
| HIV/AIDS epidemic | AIDS epidemic |
| HIV/AIDS prevalence | HIV prevalence |
| HIV/AIDS prevention | HIV prevention |
| HIV/AIDS testing | HIV testing |
| Most vulnerable to infection | Most likely to be exposed to HIV |
| People living with HIV/AIDS | People living with HIV and AIDS |
| Prevalence rates | Prevalence |
| Vulnerable groups | Most likely to be exposed to HIV |

Appendix 5: Bibliography

Hundreds of documents were consulted in the course of this project. The full bibliography is available on the project website (<http://www.unaids.org/aidsscenarios>) and on the companion CD-ROM (available from UNAIDS). Listed here are documents that were particularly useful, together with reference material, and the papers that were specifically commissioned by the project.

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Appendix 6

Exercises

to support

the scenario

process

Exercise 1: Short overview presentation of the scenarios

A short presentation will need to touch upon the scenario method and the five driving forces, along with an introduction to the scenarios themselves and a short summary of each. It can be helpful to break up each scenario presentation with a discussion to help the audience assimilate and orient themselves in each scenario future. After each scenario, ask participants to discuss the scenario by, for example: asking what key words they might use to describe this future; what they like or dislike about this future. Invite the participants to share the outcome of their discussions in plenary before moving to present the next scenario.

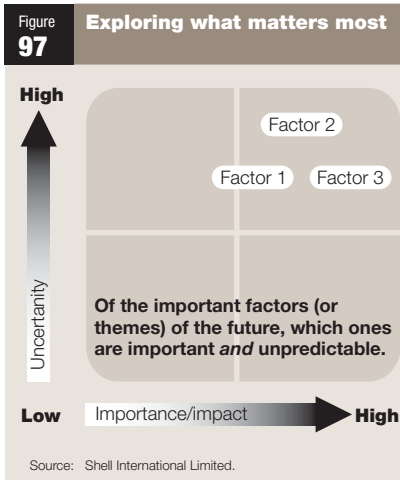
Time needed: At least 20–30 minutes.

Materials: Microsoft PowerPoint presentations on the companion CD-ROM, available from UNAIDS.

Exercise 2: Telling your own stories

Ask participants to write stories about particular characters, or about themselves, as if they were living within different scenarios. This can increase their awareness of the factors, drivers, and fundamental uncertainties (and the systemic relationship between them) that determine the future of HIV and AIDS. Because the exercise demands that people think about living within a scenario, it will deepen their understanding of the threats and opportunities that each future may present. By sharing the stories, this can lead a group to articulate, share, and map their individually-held or group-held expectations about the future of HIV and AIDS, and can increase mutual understanding between various stakeholders.

At the Affirmation Workshop in Johannesburg, the participants created a number of stories, describing people's lives in each of the scenarios. The people they wrote about represented a wide range of different social groups. They described their lives over the course of each scenario, starting from the present. They provided details of important events within their characters' community or country, within Africa or within the world that affected the lives of their characters. Each story ended with a description of what their character was thinking about his or her future. These stories are on the companion CD-ROM, available from UNAIDS.



Exercise 3: Developing country-specific scenarios

The process that was used to create the *AIDS in Africa* scenarios can also be employed to build scenarios for a particular country. Country-specific scenarios can help in the development and testing of national policies and plans. The scenario-building process was as follows.

- **Step 1: Explore different perspectives to determine what really matters**

The aim of this first step is to explore the range of issues relevant to the future of HIV and AIDS in a country, using open-ended interviews, meetings, and a workshop process with key decision-makers and opinion-formers. It is also important at this stage to identify what time horizon this project needs, that is, will the new scenarios look out across 10 or 20 years?

Using the five key drivers of change identified by the initial project can help the participants identify the critical issues relevant to the future of HIV and AIDS in a particular country. The range of relevant issues is likely to include many different areas. It is important to consider influences that are both domestic and foreign or international in origin.

Develop a synthesis of the issues that surface in the preliminary interviews and meetings. This will provide the process with a solid foundation for future research, establishing what really matters. In addition, a start can be made on thinking about how each issue might play out. The interviews can also prove invaluable for helping to identify workshop participants and key expert perspectives.

- **Step 2: Identify important and uncertain factors**

Bearing in mind the range of key relevant issues that have been identified, this step focuses on identifying the key factors that will shape each of these issues. Clustering these key factors can help to reveal the forces driving change. Are any key issues or perspectives still missing? (**Figure 97**).

- **Step 3: Identify predetermined and critical, but uncertain, driving forces**

Explore two key questions:

- Which key forces are ‘predetermined’—that is, are relatively immutable and carry a clear impact?
- Which key forces will both carry most impact and are most uncertain?

A matrix can be used to classify and prioritize the key driving forces in terms of their impact and uncertainty.

- **Step 4: Characterization of driving forces**

This step explores how the driving forces might play out. For each driving force, it is important to identify both the current situation and how it might change in the future. What are the different alternatives that can be envisaged and what is the range of possibilities? By the end of this step the scenario builders should have reached agreement on the set of key outcomes (both predetermined and uncertain) that need to be reflected in the final set of scenarios.

- **Step 5: Develop sketch scenarios**

Create two or three sketch scenario stories, setting out how the driving forces could play out, as well as how they could interact. Describe the logic of each scenario—this will provide an outline of the events that make up that story; the driving forces that are crucial to making those events happen; and the roles of particular players. Establish the branching points that differentiate the scenarios—what are the crucial differences between the scenarios that cause them to develop differently? The participants should find memorable names for the scenarios that resonate with meaning for them and encapsulate the essence of the stories. This step can be carried out by getting different groups to develop sketch scenarios in parallel, before presenting and combining their outputs.

- **Step 6: Agree scenarios**

Develop a common set of scenario stories by sharing, comparing, and contrasting the scenarios developed by different groups. Compare the final stories to the issues raised at the beginning of this process—are they relevant? In addition, the stories should be plausible and internally consistent. If necessary, further discussion and analysis can be used to improve the plausibility, challenge, and relevance of the individual scenarios and the scenarios as a set.

- **Step 7: Explore implications**

Once the stories are agreed, they can be explored: users can reflect on the opportunities, constraints, and threats that each scenario presents.

Exercise 4: Test or challenge a vision or strategy

- **Step 1: Present the existing strategy**

Present and discuss the strategy in question: this will ensure that everyone is familiar with its details. It is critical to explore the assumptions that underpin this strategy.

- **Step 2: Present the *AIDS in Africa* scenarios**

Using the five key forces driving change that were identified during the *AIDS in Africa* project, explore the strategy in question and how it might play out.

Present the scenarios: discussions should follow the presentation of each scenario. Workshop participants may want to consider how the threats and opportunities presented in each scenario would affect their existing strategy. After each discussion, try to reach agreement on the set of key issues for that scenario.

- **Step 3: Agree a list of issues across the three scenarios**

Reflect on the issues that have emerged in discussion and consider if any additions or changes need to be made. Sort the list of issues into those that are common to all scenarios and those that are specific to a particular scenario or pair of scenarios.

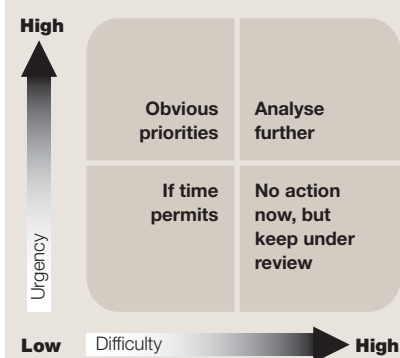
The threats and opportunities that are common across all the scenarios are likely to represent issues that must be addressed whichever future unfolds. The issues that are specific to one scenario or a pair of scenarios represent strategic options—choices that may need to be made, depending on the risks they represent.

- **Step 4: Prioritize strategic issues and decide what to do**

Prioritize the issues based on how difficult they will be to tackle and how urgently they need to be addressed (**Figure 98**). Those issues that are both most urgent and most difficult to deal with will require further analysis. If they are common to all three scenarios, then they represent fundamental challenges to the existing strategy. If they are specific to one scenario then they represent a strategic option (as before).

In the case of issues specific to one scenario that are both very urgent and very difficult, the participants will need to explore possible responses, and then rank them according to preference and what can be done. Identifying barriers that might block progress in acting on each response will help to establish the role that other stakeholders might play.

Figure 98 Identifying options



Source: Shell International Limited.

AIDS in Africa: Three scenarios to 2025





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The decisions we make about the future are guided by our view of how the world works and what we think is possible.

Scenarios are stories about the future; but their purpose is to help make better decisions about the present. People can use them to challenge their assumptions and implicit beliefs, and look beyond their usual worldview.

This book and the accompanying CD-ROM are intended to deepen people's understanding of the possible course of the AIDS epidemic in Africa over the next 20 years, its context and impacts, and how particular policies may shape Africa's future.

**“ No progress
can be made by
any nation unless
serious attention
is given to the
control of malaria,
TB and HIV/AIDS.**

—President Obasanjo
of Nigeria, May 2004.

