

**ESTIMATING THE RESOURCE REQUIREMENTS
FOR THE CAMBODIA NATIONAL STRATEGIC
PLAN
FOR A COMPREHENSIVE AND
MULTISECTORAL RESPONSE TO HIV/AIDS
2006-2010**

April 2006



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TECHNICAL REPORT

ESTIMATING RESOURCE REQUIREMENTS FOR THE CAMBODIA NATIONAL STRATEGIC PLAN FOR A COMPREHENSIVE AND MULTISECTORAL RESPONSE TO HIV/AIDS 2006-2010

April 2006

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The views expressed in this document do not necessarily reflect those of USAID or the United States Government.

Abbreviations

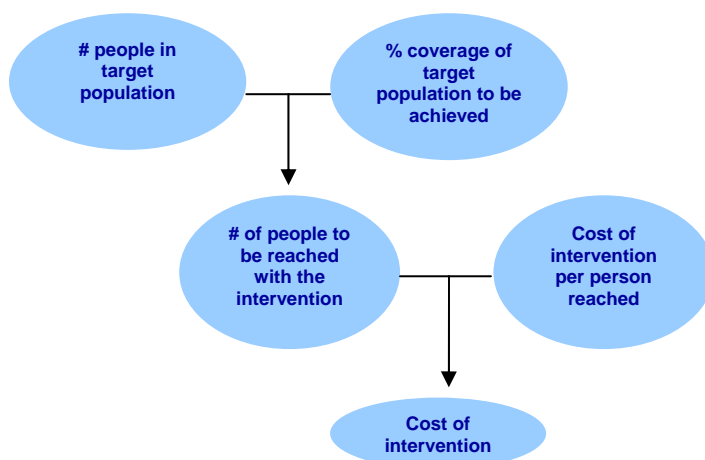
ADB	Asian Development Bank
AFB	Acid-fast bacillus test
AIDS	acquired immune deficiency syndrome
ALT/AST	liver enzyme tests
ANC	antenatal clinic
ARV	antiretroviral
ART	antiretroviral therapy
BCC	behavior change communication
CBC	complete blood count
CDC	United States Centers for Disease Control and Prevention
CIDA	Canadian International Development Agency
CXR	chest x-ray
EU	European Union
FHI	Family Health International
GFATM	Global Fund to fight AIDS, Tuberculosis and Malaria
HBC	home-based care
HIV	human immunodeficiency virus
IDU	injection drug user
IEC	information, education and communication
ILO	International Labor Organization
JICA	Japan International Cooperation Agency
KHANA	KHMER HIV/AIDS NGO Alliance
M&E	monitoring and evaluation
MMM	Mondul Mith Chouy Mith (PLWHA support centers)
MOEYS	Ministry of Education, Youth and Sport
MOH	Ministry of Health
MSM	men who have sex with men
NAA	National AIDS Authority
NCHADS	National Center for HIV/AIDS, Dermatology, and STDs
NGO	nongovernmental organization
NIPH	National Institute of Public Health
NSP	Needle and Syringe Program
NSP2	second National Strategic Plan
NVP	nevirapine
OI	opportunistic infection
OVC	orphans and vulnerable children
PLWHA	people (person) living with HIV/AIDS
PMTCT	prevention of mother-to-child transmission
PSI	Population services International
STI	sexually transmitted infection
SW	sex worker
TB	tuberculosis
TWG	Technical Working Group
UNAIDS	Joint United Nations Program on HIV/AIDS
UNDP	United Nations Development Program
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNFPA	United National Population Fund
UNICEF	United Nations Children's Fund
UNODC	United Nations Office on Drugs and Crime
USAID	United States Agency for International Development
VCCT	voluntary confidential counseling and testing
WHO	World Health Organization

Executive Summary

- The overall goals of the 2nd National Strategic Plan are: to reduce new infections of HIV; to provide care and support to people living with and affected by HIV/AIDS; and to alleviate the socio-economic and human impact of AIDS on the individual, family, community and society. In order to achieve these goals, the 2nd National Strategic Plan (NSP2) identified 7 strategies and associated HIV/AIDS interventions for implementation over the period 2006-2010.
- This Technical Report summarizes the analytical approach and data inputs that have been used in the estimation of the resource implications of various HIV/AIDS-related interventions in Cambodia. The analysis draws strongly on HIV/AIDS expenditure information collected from donors and implementing agencies by the POLICY Project/Futures Group and the National AIDS Authority in 2005, reports prepared by the various Technical Working Groups for the Review of Cambodia's 1st National Strategic Plan as well as other strategic documents. For care and treatment interventions there was a strong reliance on reports prepared by NCHADS as well as various submissions to the Global Fund (GFATM).
- It should be noted that the evaluation of the merit of the various targets set in the NSP2 is beyond the purview of this analysis. By making the resource implications explicit the analysis will contribute to an evidence base that will form an objective basis for prioritization of interventions identified under the strategic plan.

Approach and Methodology

- The Resource Needs Model was used to estimate the resource implications of the various prevention, care and treatment interventions identified in the National Strategic Plan. The basic approach of the Resource Needs Model is to first estimate the population target group in need of HIV/AIDS-related services that could potentially have access to those interventions or services given the existing infrastructure. A coverage target, usually identified in the strategic plan, is then



supplied to estimate the population that would actually be reached by the intervention or will use the service. The estimated total cost is the product of the unit cost to provide the intervention and the number of people accessing the intervention.

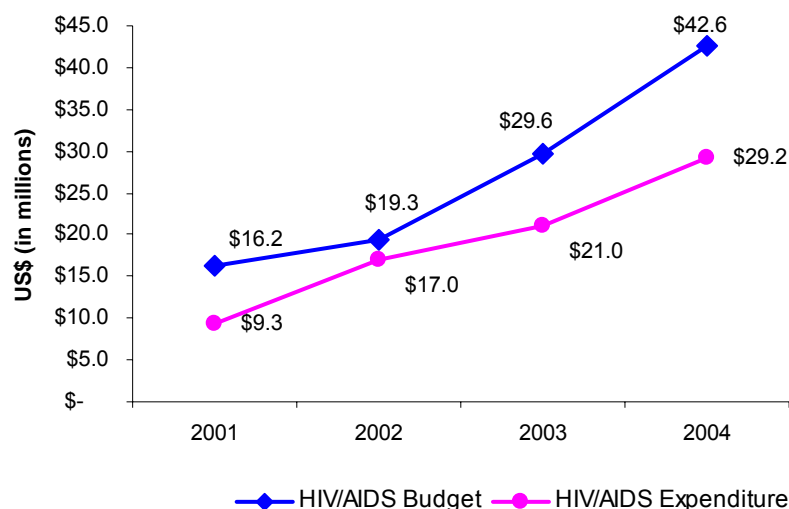
- In order to customize the model for Cambodia, an extensive data collation process was undertaken. Several data consultation meetings were conducted with experts in

various fields to verify the data inputs that have been entered into the model. The data collection process included an extensive HIV/AIDS expenditure data collection. Expenditures by households were not captured. Household HIV/AIDS expenditure is notoriously hard to capture, and future data collection efforts should not omit this source of AIDS spending – especially spending on care and treatment.

AIDS Expenditure (2001-2004)

- Figure 1 shows budgeted and actual expenditure for HIV/AIDS in Cambodia for the period 2001-2004. In 2001 \$16.2 million was available for HIV/AIDS and this increased to a budgeted \$42.6 million in 2004. The variance between actual and budgeted expenditure changed each year as Figure 1 illustrates. In 2001 \$9.3 million was spent, leaving an estimated \$6.9 million unspent – a variance of 43 percent. The variance (in percentage terms) was less in subsequent years, decreasing to 12 percent in 2002. In absolute terms the largest difference between budgeted and actual spending was in 2004. In 2004 expenditures totaled \$29.2 million, (the equivalent of 31% of the budgeted \$42.6 million; an absolute difference of 31 percent).

Figure 1: Available resources for HIV/AIDS (2001-2004; current US\$)



- The data inputs for each intervention, together with the assumptions and data sources are described in detail in the report. The sources and motivations are provided in the endnotes to this report. The overall results are briefly summarized here.

Resources Required (2006-2010)

- Figure 2 and Figure 3 show the total resource requirement, based on the methodology and data inputs described in the report. The total resource requirement is estimated to be US\$47.117 million in 2006 and US\$69.877 million in 2010. The resource requirement by Strategy is shown in Figure 2. Strategy 1 accounts for just under half (48 percent) of the total resource requirements in 2010. Strategies 2 and 3 respectively account for a third (31 percent) and a tenth (11 percent) of the total

resource requirement. As illustrated in Figure 3, prevention (which includes VCCT and PMTCT) accounts for the largest share. The total prevention requirement is estimated to be US\$25.162 in 2006 and US\$41.026 in 2010 (Figure 3).

Figure 2: Total Resources required by Strategy (2006-2010)

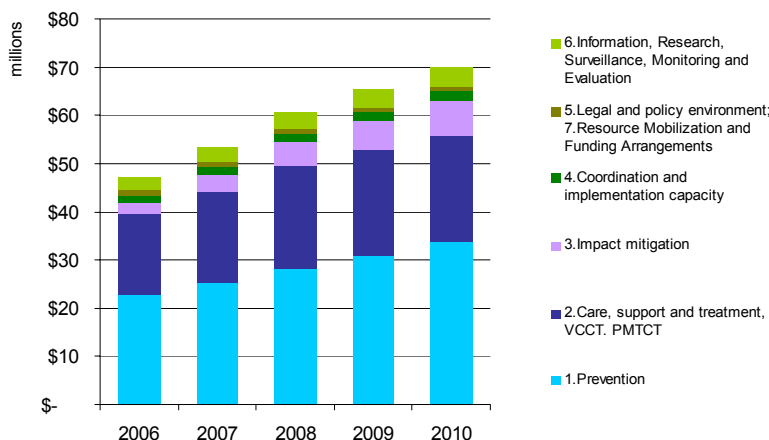
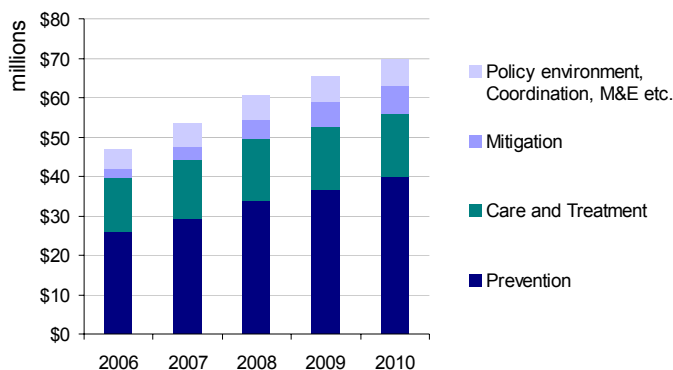


Figure 3: Total Resources required by intervention category (2006-2010)



Resource Gap Analysis

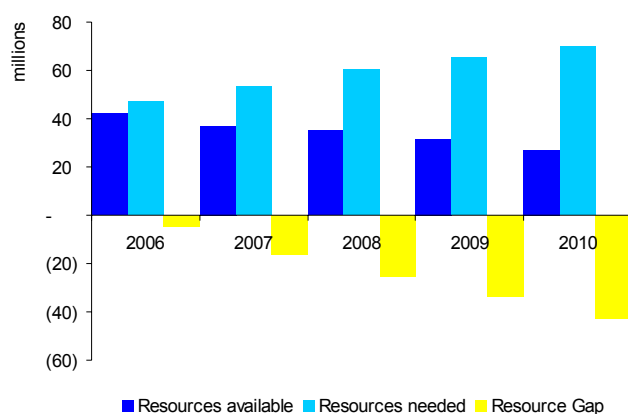
- The resource gap is calculated based on the resources available in 2005 and the future commitments that had been made for 2006 at the time, as shown in Table 1. Given the estimates of resource needs for 2006 through 2010 and the committed resources, the implied resource gap is illustrated in Figure 4.

Table 1 : Resources available (2006-2010)

	% Shares of the Total Resource Availability				
	2006	2007	2008	2009	2010
Government (NAA, NCHADS)	3%	4%	4%	4%	5%
External sources	68%	70%	63%	64%	75%
GFATM (R1,2 and 4)	29%	26%	33%	32%	20%
Total resources available (US\$ millions)	42.2	36.9	35.2	31.5	27.1

- It is estimated that in 2006, 90 percent of the resources required will be met by the available resources. While there have been significant resources committed by government and donors, only a third (39 percent) of the resource requirement in 2010 has been met based on the current commitments (Figure 36). The successful implementation of the NSP2 will critically depend on whether this resource gap can be filled as well as the government and stakeholders' ability to carefully prioritize activities in the face of remaining resource gaps.

Figure 4: Resource Gap Analysis: (2006-2010)



Introduction

The third National Strategic Development Plan (2006-2010) provides the development context for the National Strategic Plan for a Comprehensive and Multisectoral Response to HIV/AIDS (2006-2010). The overall goals of the National Strategic Plan are to:

- To reduce new infections of HIV;
- To provide care and support to people living with and affected by HIV/AIDS;
- To alleviate the socio-economic and human impact of AIDS on the individual, family, community and society.

In order to achieve these goals the National Strategic Plan identified 7 strategies and associated interventions in the following areas:

1. Prevention
2. Care, support and treatment
3. Impact mitigation
4. Coordination and implementation capacity
5. Legal and policy environment
6. Information, Research, Surveillance, Monitoring and Evaluation
7. Resource Mobilization and Funding Arrangements

The specific **objectives of the analysis** are to:

- Estimate the resource requirements of Cambodia's second National Strategic Plan (2006-2010) and make explicit the resource implications of the various targets that have been in the strategic planning process;
- Assess the resource gap based on current resource availability and the resource needs estimation;
- Contribute to an evidence base that will form an objective basis for prioritization of initiatives identified under the strategic plan.

The 7th Strategy of the National Strategic Plan is aimed at "Increased, sustainable and equitably allocated resources for the national response". One of the activities is a costing exercise that "will assess the barriers at all levels to financial and human resources required for an enhanced response". The present activity is a first step to addressing this objective.

This Technical Note summarizes the analytical approach that has been used in the estimation of the resource requirements of various HIV-AIDS-related interventions in Cambodia. The analysis draws strongly on HIV/AIDS expenditure information collected from donors and implementing agencies by the POLICY Project/Futures Group and the NAA in 2005, reports prepared by the various Technical Working Groups for the review of Cambodia's first National Strategic Plan as well as other strategic documents. Similarly, for care and treatment interventions there was a strong reliance on estimation prepared by NCHADS.

Customizing the Resource Needs Model for Cambodia

Analytical Framework

- The Resource Needs Model is the analytical tool that was used in this exercise. This model can be used as a stand-alone tool to assess resource needs — as was done in this analysis — or as one of the modules of the GOALS Model¹. The other modules are: the Impact Module and the Capacity Module. The Resource Needs Module² provides a methodology to examine the financial resources needed to implement a variety of prevention interventions, care and treatment programs, and interventions for impact mitigation.
- Figure 5 illustrates the Resource Needs Module as it relates to the strategic planning process. As in many other countries affected by HIV/AIDS, Cambodia has developed its National Strategic Plan through a process of extensive consultation. This plan identifies various goals, objectives and interventions. In order to estimate the resources needed for implementation of these interventions, three key data inputs are needed: (1) target population size, (2) coverage and (3) unit costs. The basic approach is to first estimate the **size of the target group** in need of HIV/AIDS-related services that could potentially have access to those interventions or services given existing infrastructure. A **coverage** target is then supplied to estimate the population that would actually be reached by the intervention. The product of these two inputs gives the number of people who will be reached by the intervention. The estimated total cost is the product of the number of people reached by the intervention or service and the **unit cost** to provide that intervention or service. This is illustrated in Figure 6 for settings where individuals are the unit of analysis (e.g., outreach and peer education programs directed at sex workers, MSM and IDUs) and Figure 7 for situations where a facility is the unit of the analysis (e.g., VCCT centers or PMTCT centers).

Figure 5: Flow chart of estimation of resource requirements

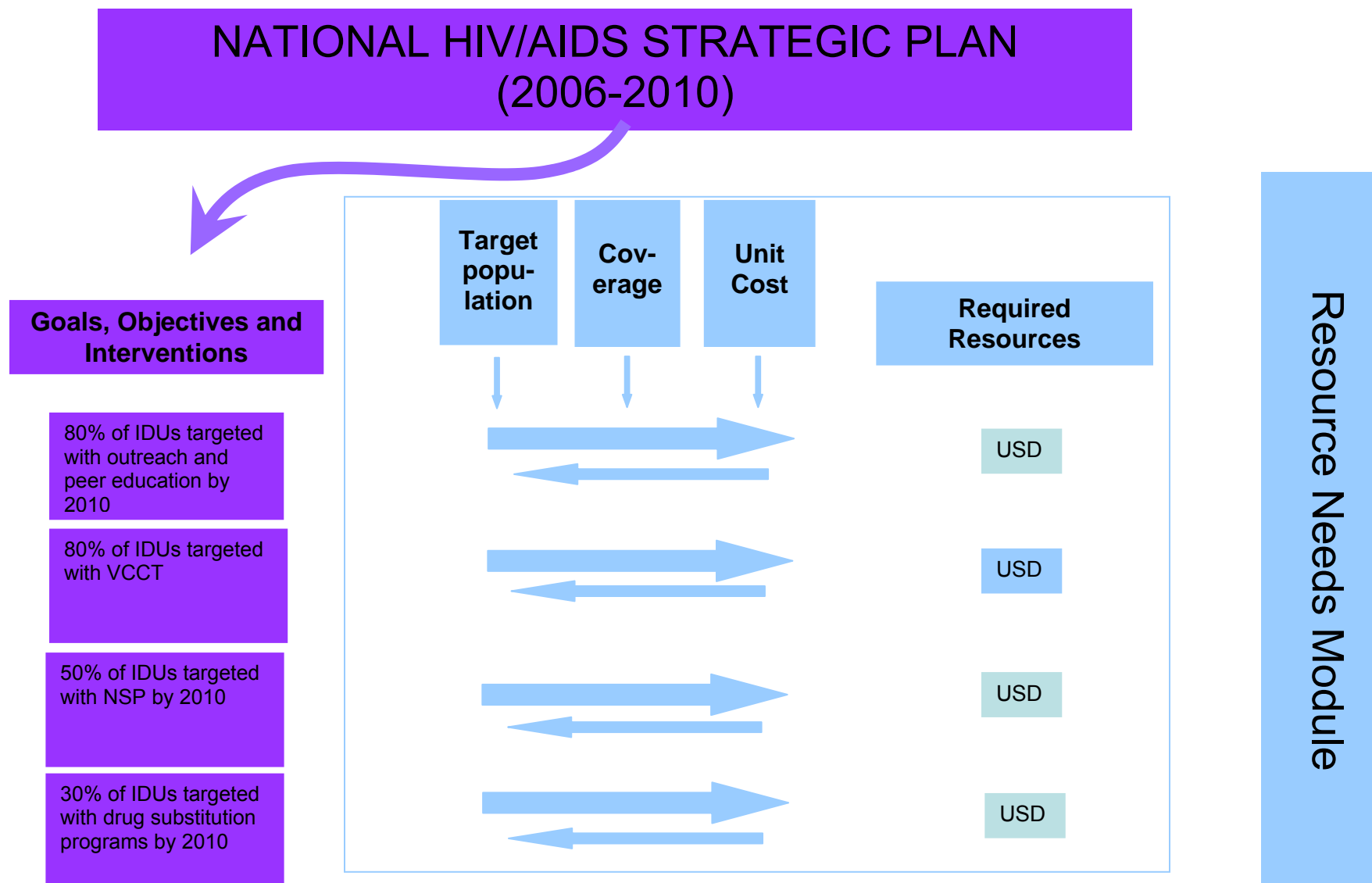


Figure 6: Basic approach to resource requirement estimation where the individuals are the unit of analysis.

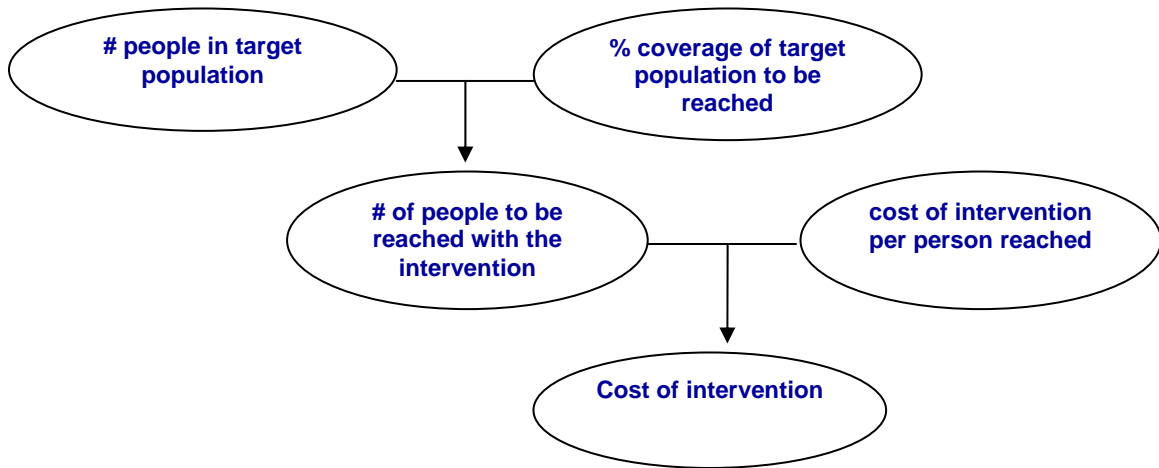
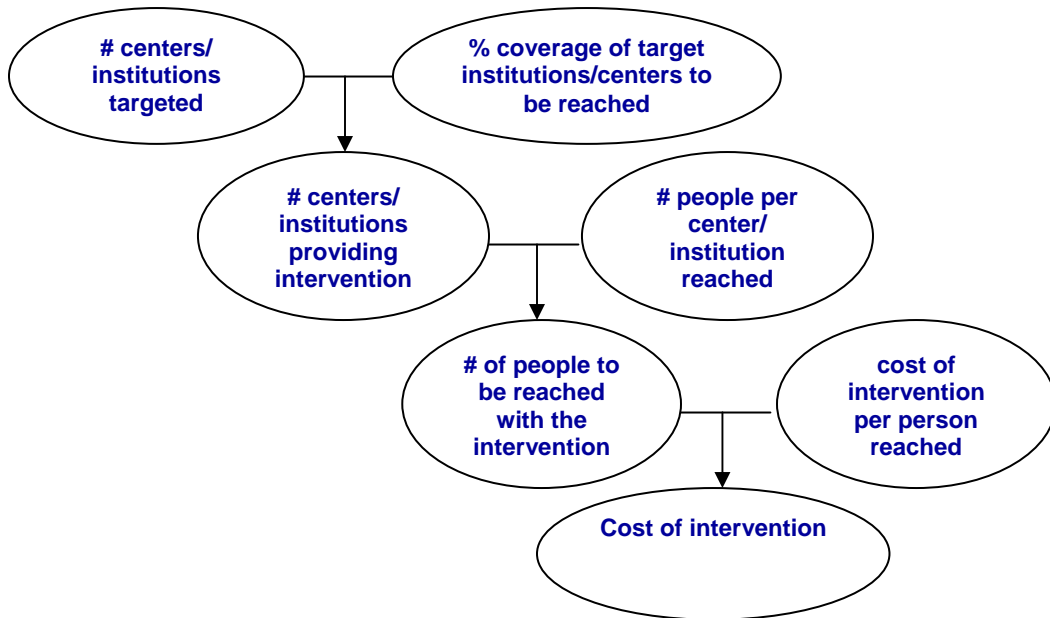


Figure 7: Basic approach to resource requirement estimation where the institutions are the unit of analysis.



- A manual containing a detailed description of the methodology of the Resource Needs Module is available³. A complete listing of background unit cost data can be found in one of the last worksheets of the model, labeled 'Unit cost – reference.' The complete bibliographic citations for this worksheet can be found in the References section of the manual. The complete set of equations used in the module, along with detailed descriptions of unit cost figures, coverage targets, and data sources for population target groups, is available in the technical annex of the manual.

Data Requirements

- **Target population** being reached by the intervention: Various interventions are targeted at different target populations. For example, for PMTCT services pregnant women are the target population; for VCCT services, the sexually active adult population is the target population; and for sex workers outreach and peer education programs, sex workers are the target population. Demographic indicators form the basis of the estimated size of many target populations. The sources of information for the size of the target populations are: the Demographic and Health Survey, data from Cambodia National Institute of Statistics⁴, Spectrum Model, World Bank databases and other databases.
- **Coverage** of the target population that will be reached: The extent to which the target populations are reached by existing programs determines the coverage in the start year of the analysis. In most instances coverage data are available from documents collated or produced as part of the Review of the first National Strategic Plan (e.g., the reports of the Prevention Technical Working Group (TWG) and the Care and Treatment TWG). The targets set in the end year of the analysis are determined by the targets in the final year of the strategic plan, 2010. For care and treatment, the GFTAM submissions for various rounds were used, as well as supporting documentation especially from NCHADS. Other sources include the Coverage of Essential Services Survey⁵.
- **Unit cost** or the per person cost of reaching the target group: Unit cost information was taken from a variety of sources. Important sources of HIV/AIDS expenditure data were NCHADS and POLICY Project/Futures Group. This expenditure information was combined with output information to obtain unit cost estimates. There was also reliance on special initiatives to obtain unit cost information e.g., GFATM submissions and the Moug Russey cost analysis conducted by FHI⁶.
- The generic version of the Resource Needs Module was customized to reflect the 7 NSP2 strategic intervention areas. The largest number of interventions falls under Strategy 1 (Prevention) and Strategy 2 (Treatment, Care and Support). The interventions falling under the various strategies are given on the following page. A detailed description of each of these categories is provided under the relevant sections that follow in the report.

Strategy 1: Prevention⁷

- Outreach and peer education targeting priority populations
 - Sex workers and clients
 - IDUs
 - MSM
 - Other vulnerable groups
 - Youth
- Workplace interventions
- Condom provision
- STI management
- Mass media
- Blood safety
- Post-exposure prophylaxis
- Safe injection
- Universal precautions

Strategy 2: Care, support and treatment⁸

- VCCT
- PMTCT
- Home-based care and MMM
- Treatment of opportunistic infections
- Prophylaxis for opportunistic infections
- Laboratory tests for ART
- ARV therapy
- Training
- Nutritional support
- Tuberculosis

Strategy 3: Impact mitigation

- Orphan support
- Nutritional support
- School support

Strategy 4: Coordination and implementation capacity

Strategy 5: Legal and policy environment

Strategy 6: Information, Research, Surveillance, Monitoring and Evaluation

Strategy 7: Resource Mobilization and Funding Arrangements

Validation

- The model set-up was validated by running the model retrospectively for 2004 (the year for which actual expenditure data exists) and matching the model estimates with the actual expenditures.

Limitations

A few caveats about the resource needs estimation should be noted.

- **Not a formal costing:** It should be noted that this is not a formal costing (by the formal economic definition) of the programs that make up the HIV/AIDS response. There was no primary data collection for this analysis and no cost functions have been derived. This would require a much more complex and resource intensive process.

- **Non-linearities accommodated:** The analysis is essentially a linear analysis, and no changes in unit costs were assumed as programs are scaled up. This is largely due to lack of data quantifying the exact magnitude of the changes in unit costs. Where new services are being introduced (e.g., VCCT centers) some non-linearity is allowed and two different unit costs are used, allowing the unit costs for new interventions to take into account start up costs (include e.g., equipment and infrastructure costs).
- **Health system indirect costs:** Resource estimates for interventions located within the health sector (e.g., VCCT sites, PMTCT sites, facility-based care such as OI treatment and OI prophylaxis) do not explicitly take into account the indirect or overhead costs to the health sector. The analysis therefore generally underestimates the resource implications to the health sector. This is also the case in the cost estimates derived from the Moug Russey cost analysis.
- **Household health expenditures:** The analysis also underestimates the resource implications faced by households of PLHAs. In fact, by its nature the Resource Needs Module does not consider these resource implications, but it is worth noting when one interprets the findings as the expenditures by households on healthcare and HIV/AIDS-related healthcare are not trivial.
- **Infrastructure costs:** The model estimates feasible coverage targets assuming an ambitious expansion of current coverage unfettered by current financial resource constraints but without significant development in infrastructure. Instances where substantial additional infrastructure and systems development are needed the cost is built in for strengthening the infrastructure system to deliver new services that are delivered, e.g., VCCT, PMTCT, ART, blood safety.
- **Source of funding:** Generally, the issue of sources of funding is not addressed in this model. Instead, activities covered by all sources of funding are included and the source of funding is assessed afterward, as is the standard approach in resource needs estimation.
- **Customization of model:** The model was customized to reflect the 7 strategies of the NSP2. The results of the resource needs estimation is broken down by intervention category, by Strategy in the National Strategic Plan and into the standard categories of: Prevention, Care and Treatment, Mitigation, and lastly, Policy environment, Management, Coordination, M&E and Program support.

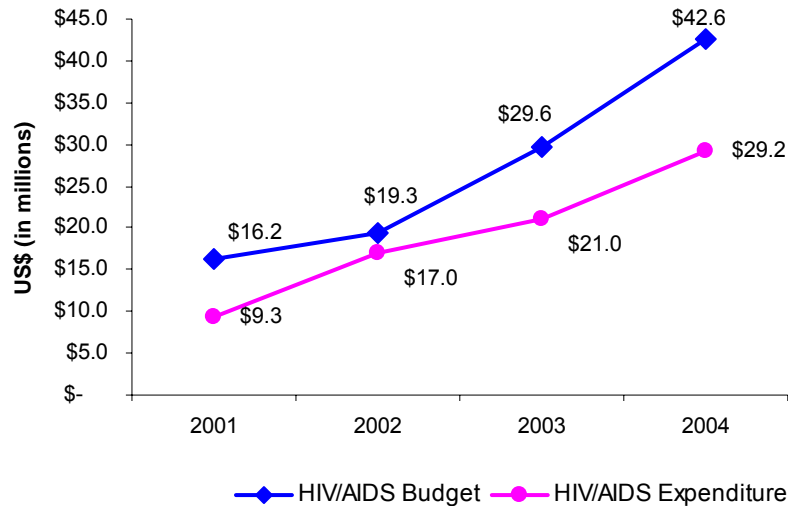
Resource Availability

- This section draws strongly upon the findings from the HIV/AIDS expenditure data collection and expenditure analysis that was done by the POLICY Project/Futures Group⁹ and HIV/AIDS budget and expenditure tracking by NCHADS¹⁰.

AIDS Expenditure (2001-2004)

- The total financial resources available for HIV/AIDS in Cambodia was estimated using the best information available. Figure 8 shows budgeted and actual expenditure for the period 2001-2004. In 2001 \$16.2 million was available for HIV/AIDS and this increased to a budgeted \$42.6 million in 2004. There is a variance between actual and budgeted expenditure. This variance changes by year as Figure 8 illustrates. In 2001 \$9.3 million was spent, leaving an estimated \$6.9 million unspent – a variance of 43 percent. The variance (in percentage terms) was less in subsequent years, decreasing to 12 percent in 2002. In absolute terms the largest difference between budgeted and actual spending was in 2004. In 2004 \$29.2 million was spent, which is equal to 31 percent of the budgeted \$42.6 million - a variance of 31 percent.

Figure 8: Available resources for HIV/AIDS (2001-2004; current US\$)



Box 1: Some Data Challenges in Estimating AIDS Expenditure

- **Double counting:** In collecting the expenditure data a distinction was made between implementing agencies and financing agencies. Data from financing agencies was used to cross check the expenditure data collected from implementing agencies. However, some implementing agencies also act as financing agencies by distributing funds to other implementation agencies (i.e. through sub-contracts). This is especially common with international NGOs, which act as implementing agencies while simultaneously financing national NGOs. Thus, a simple aggregation of all expenditures will likely suffer from a large degree of double counting. During data collection, considerable effort was made to minimize double-counting by requesting dis-aggregated financial data from implementing agencies.
- **Time period of financial reporting:** Various institutions have different financial years and time periods for financial reporting. As much as possible it was ensured that the time period for all expenditures collected were reported and appropriately annualized.
- **Factual correctness:** Whenever possible, actual expenditures rather than budgeted expenditures were used. The financial information provided for AIDS expenditure analysis was voluntary and there is no way to verify the accuracy of the reported expenditures. The extent to which hidden costs and overheads are incorporated was largely beyond the control of the data collection process. These potential distortions should be addressed in the routine reporting system for AIDS expenditures (informed by the experiences of National HIV/AIDS Accounts in other countries) that will be developed in the future. The reporting system should also address the data commissions (e.g., double counting) and data omissions encountered in this study.

- The sections that follow are organized by Strategy. The data inputs and assumptions are explained in detail and the endnotes reference the sources and provide the motivations for various assumptions made in the analysis. Each section presents the results of the analysis for the corresponding strategy — in terms of number of people reached and resources required. The concluding section presents the resource gap, estimated using known resource availability between 2006 and 2010.

Resource Requirements for Strategy 1: Prevention

Strategy 1: Increased coverage of effective prevention interventions, additional interventions developed.

Interventions targeting Sex Workers

- Table 2 lists the assumptions regarding population size, coverage, and unit costs for interventions targeting direct and indirect sex workers. These assumptions are informed by the most up-to-date surveillance and epidemiologic and behavioral reports available.

Table 2: Data inputs for interventions targeting sex workers

Population size	2004	
Total number of sex workers	19,728 ¹¹	
Number of direct sex workers	15,000	
Number of indirect sex workers	4,728	
Annual growth rate in number of sex workers	0% ¹²	
Coverage	2004	2010
Percent direct sex workers reached by intervention per year	60% ¹³	98% ¹⁴
Percent indirect sex workers reached by intervention per year	20%	98%
Percent sex workers accessing STI services	60%	90% ¹⁵
Unit costs	USD	
Cost per sex worker targeted	\$22.40 ¹⁶	
Cost per male condom distributed	\$0.08 ¹⁷	
Cost per STI treated	\$7.14 ¹⁸	
Behavioral variables	2004	2010
Number of sex acts per direct sex worker per year	520 ¹⁹	
Number of sex acts per indirect sex worker per year	78 ²⁰	
Percent direct sex workers using condoms	96%	98%
Percent indirect sex workers using condoms	84%	98%
Percent of all condoms that are female condoms	0.045% ²¹	1%

- Based on the assumptions outlined in Table 2, there will be an estimated 20,795 sex workers in Cambodia in 2006. In 2006, 73 percent²² (15,811) of the number of direct sex workers will be reached through peer education and outreach programs (Figure 9). By 2010, the projected number of direct and indirect sex workers reached increases to 17,217 and 5,427, respectively (i.e., in 2010 coverage will be 98 percent of the total number of sex workers).

Figure 9: Sex workers reached by peer education and outreach programs (2006–2010)

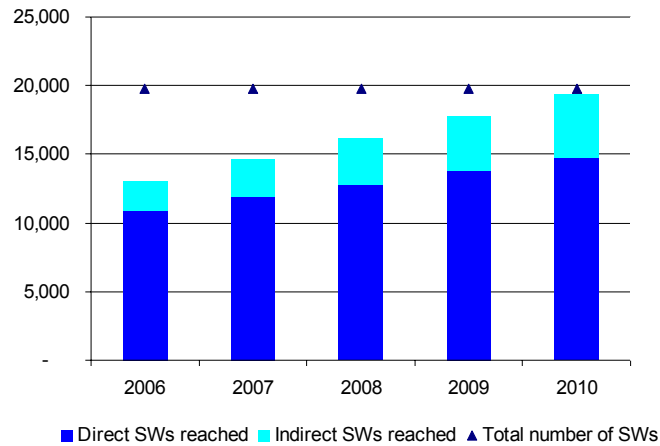


Figure 10 and Figure 11 show the resources required for interventions targeting direct and indirect sex workers between 2006 and 2010. In 2006, US\$0.831 million will be required, increasing to US\$1.194 million in 2010. Resources for indirect sex worker interventions account for a small, but increasing share – from a tenth (11 percent) in 2006 increasing to nearly a fifth (15 percent) in 2010 (Figure 10). Figure 11 shows a breakdown of the resource requirements by program component (outreach and peer education, condoms, and STI treatment).

Figure 10: Resources required for interventions targeting sex workers (2006–2010)

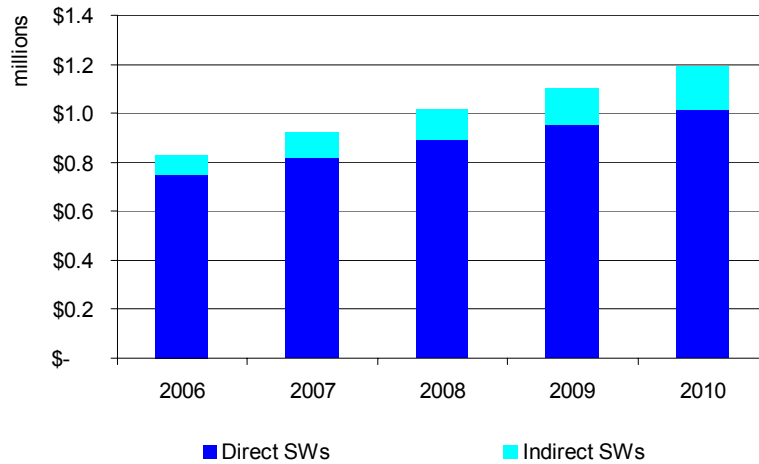
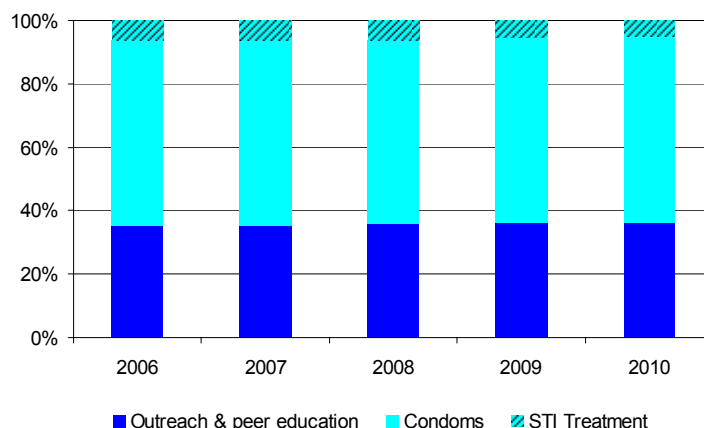


Figure 11: Share of resources required for interventions targeting sex workers by program component (2006–2010)



Interventions targeting Men having sex with Men

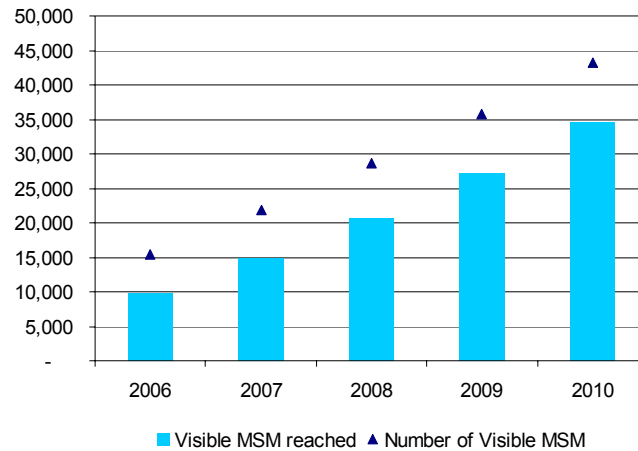
- Table 3 lists the assumptions used in the resource needs assessment for interventions targeting men who have sex with men (MSM). Upon the recommendation of the January 2006 Data Consultation workshop, the approach used here is to separate the MSM into two groups: visible MSM and hidden MSM. It is assumed that MSM account for approximately 2 percent of the adult male population, i.e., approximately 63,805 in 2004 increasing to 75,649 in 2010. In 2004 3,500 of MSM were assumed to be visible (i.e., 0.11 percent of adult males). It was assumed in the workshop that by 2015 all MSM will be visible, i.e., by 2015 2 percent of adult males will fall into the category: “visible MSM”. The number of hidden MSM was calculated to be the difference between the total MSM and the visible MSM at any time.
- Visible MSM are targeted with interventions such as peer education and outreach and condom provision and referral for STI treatment. For obvious reasons, hidden MSM cannot be targeted in this way. Instead, interventions directed at the hidden MSM population consist of information, education and communication (IEC) and behavior change communication (BCC) activities.

Table 3: Data inputs for interventions targeting MSM

Population size	2004	
Total number of MSM	65,805 ²³	
Number of visible MSM	3,500 ²⁴	
Coverage	2004	2010
Percent visible MSM reached by intervention per year	56% ²⁵	80%
Unit costs	USD	
Cost per MSM targeted	\$22.40 ²⁶	
Cost per male condom distributed	\$0.08 ²⁷	
Behavioral variables	2004	2010
Number of sex acts per visible MSM per year	182 ²⁸	
Percent of visible MSM using condoms	60% ²⁹	80%

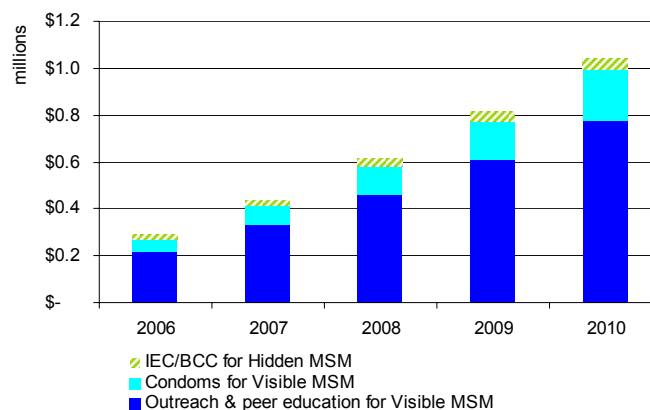
- It is estimated that nearly two thirds (64 percent; 9,829) of visible MSM will be reached by peer education and outreach interventions in 2006, increasing to 80 percent (34,520) in 2010 (Figure 12).

Figure 12: MSM reached through peer education and outreach programs (2006–2010)



- In order to achieve the coverage targets stated in Table 3, it is estimated that a total of US\$0.288 million will be required in 2006 for interventions targeting MSM, increasing to US\$1.041 million in 2010 (Figure 13). Of this total expenditure, interventions targeting hidden MSM account for about 5 percent of the total, and the largest share are required for peer education and outreach targeting visible MSM.

Figure 13: Resources required for MSM interventions by program component (2006–2010)



Interventions targeting Injecting and non-Injecting Drug Users

- The assumptions used in the analysis for interventions targeting injecting drug users (IDUs) and drug users (injecting and non-injecting) are outlined in Table 4 and Table 5. It is estimated that in 2004 there were a total of 40,000 drug users and 3,000 IDUs in Cambodia.

Table 4: Assumptions for interventions targeting IDUs

Population size	2004	
Number of IDUs	3,000 ³⁰	
Annual growth rate of number of IDUs	5.0% ³¹	
Coverage	2004	2010
Percent IDUs receiving HIV and Drug use Counseling and Testing ³²	2% ³³	60% ³⁴
Percent IDUs accessing Needle and Syringe Programs	15% ³⁵	80%
Percent IDUs accessing Drug Substitution Programs	0%	0% ³⁶
Unit costs	US\$	
Cost of HIV and Drug use counseling and testing	\$33.57 ³⁷	
Cost to train one counselor	\$75	
Cost per needle distributed and destroyed	\$0.27 ³⁸	
Cost of drug substitution treatment	\$185 ³⁹	
Cost per condom	\$0.08	
Behavioral variables	2004	2010
Number of sex acts per IDU per year	30 ⁴⁰	
Number of injections per IDU per year	730 ⁴¹	
Percent condom use among IDUs	15.9% ⁴²	60%
Other variables		
Number of IDU reached per counselor per year	26.2 ⁴³	

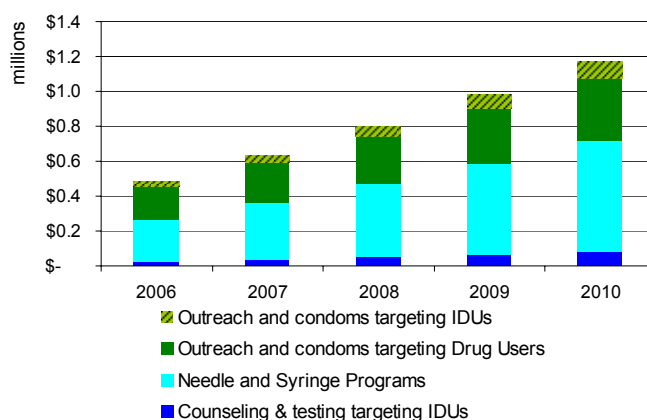
- It is projected that in 2006, 706 IDUs (21 percent of all IDUs) will receive HIV and drug use counseling and testing, and by 2010, this amount will increase to 60 percent (1,608). In 2006, an estimated 30 percent (1,213) of all IDUs will be reached by Needle and Syringe Programs (NSP), increasing to 80 percent (2,412) in 2010.

Table 5: Assumptions for interventions targeting drug users

Population size	2004	
Number of drug users	40,000 ⁴⁴	
Annual growth rate of number of drug users	5.0% ⁴⁵	
Coverage	2004	2010
Percent drug users receiving Community Outreach & Peer Education	15%	30%
Unit costs	US\$	
Cost of outreach per drug user targeted	\$22.33 ⁴⁶	
Cost per condom	\$0.08	
Behavioral variables	2004	2010
Number of sex acts per drug user per year	52 ⁴⁷	
Percent condom use among drug users	20% ⁴⁸	50% ⁴⁹

- Figure 14 illustrates the resources required for interventions targeting IDUs and drug users in general. The total resource requirement increases from US\$0.459 million in 2006 to US\$1.087 million (Figure 14). The number of drug users to be reached is quite ambitious (8,159 in 2006 and 14,875 in 2010) and the implications for implementation capacity should carefully be considered given that non-injecting drug users are at much lower risk than IDUs. Alternatively, a lower-cost model of intervention (IEC rather than peer education and outreach) could be considered.

Figure 14: Resources required for interventions targeting IDUs and drug users (2006–2010)



Interventions targeting other vulnerable groups

- The vulnerable groups addressed in the NSP2 are: police, military, street children and migrants. Using the assumptions in Table 6 and Figure 15 the estimated resource requirements for interventions directed at these groups increase from US\$5 million in 2006 to US\$6 million in 2010 (Figure 16).

Table 6: Assumptions for interventions targeting vulnerable groups

Vulnerable population 1-Police		
Population size	2004	2010
Number of Vulnerable population 1-Police	60,000 ⁵⁰	
Annual growth rate of number in group 1	2.1% ⁵¹	
Coverage	2004	2010
Percent reached by intervention per year	100% ⁵²	100% ⁵³
Unit costs	USD	
Cost per person reached	\$4.49 ⁵⁴	
Cost per condom	\$0.08	
Behavioral variables	2004	2010
Number of sex acts per year	52 ⁵⁵	
Percent condom use	10%	60%
Vulnerable population 2-Mobile/Migrants		
Population size	2004	2010
Number of Vulnerable population 2-Mobile/Migrants	105,000 ⁵⁶	
Annual growth rate of number in group 2	2.1%	
Coverage	2004	2010
Percent reached by intervention per year	20% ⁵⁷	60%
Unit costs	USD	
Cost per person reached	\$4.49	
Cost per condom	\$0.08	
Behavioral variables	2004	2010
Number of sex acts per year	12	
Percent condom use	10%	60%
Vulnerable population 3-Military		
Population size	2004	2010
Number of other vulnerable population 3-Military	129,449 ⁵⁸	
Annual growth rate	0.0% ⁵⁹	
Coverage	2004	2010
Percent reached by intervention per year	100% ⁶⁰	100% ⁶¹
Unit costs	USD	
Cost per person reached	\$4.49	
Cost per condom	\$ 0.08	
Behavioral variables	2004	2010
Number of sex acts per year	16 ⁶²	
Percent condom use	50% ⁶³	80%
Vulnerable population 4-street children		
Population size	2004	2010
Number of other vulnerable population 4-street children	27,000 ⁶⁴	
Annual growth rate	0%	
Coverage	2004	2010
Percent reached by intervention per year	60% ⁶⁵	90%
Unit costs	USD	
Cost per person reached	\$40	

Figure 15: Vulnerable groups reached (2006–2010)

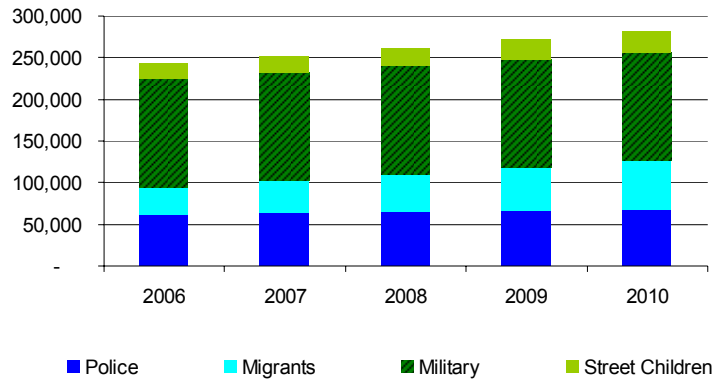
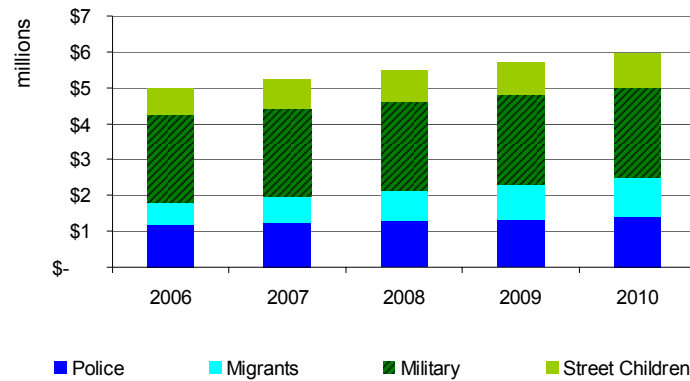


Figure 16: Resources required for interventions targeting vulnerable groups (2006–2010)



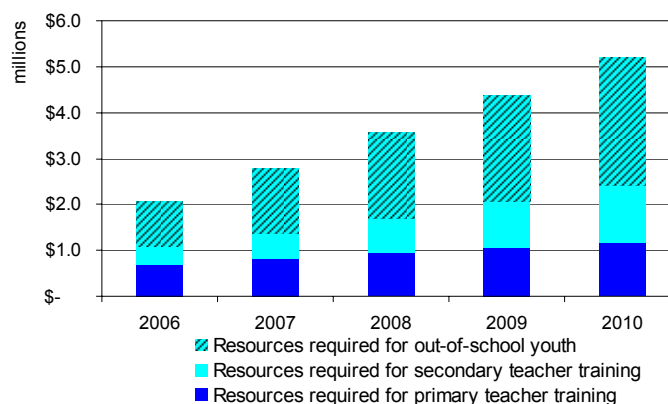
Interventions targeting In- and Out-of-school Youth

- Table 7 shows the assumptions made in estimating the resource requirements for interventions targeting in- and out-of-school youth. In 2006 US\$2.068 million will be required, with roughly equal shares spent on interventions targeting in- and out-of-school youth (Figure 17). This resource requirement is projected to more than double by 2010 (US\$5.201 million) as coverage expands to reach the targets set for 2010.

Table 7: Assumptions for interventions targeting youth

Population size	2004	2010
Primary school enrollment - gross – male	138% ⁶⁶	100%
Primary school enrollment - gross – female	114% ⁶⁷	100%
Primary pupil-teacher ratio	46 ⁶⁸	50
Secondary school enrollment - gross – male	45% ⁶⁹	70% ⁷⁰
Secondary school enrollment - gross – female	22% ⁷¹	70% ⁷²
Secondary pupil-teacher ratio	20 ⁷³	20
Frequency of teacher re-training	3 ⁷⁴	
Number of primary teachers	74,546	54,141
Number of secondary teachers	28,491	59,216
Number of youth not in school	424,539	507,568
Coverage	2004	2010
Percent primary students with teachers trained in AIDS	15% ⁷⁵	70%
Percent secondary students with teachers trained in AIDS	15% ⁷⁶	70%
Percent out-of-school youth reached	6%	60%
Unit costs	USD	
Cost per teacher trained in primary school education	\$90.48 ⁷⁷	
Cost per teacher trained in secondary school education	\$90.48	
Cost of peer education for out of school youth	\$9.41 ⁷⁸	

Figure 17: Resources required for interventions targeting youth (2006-2010)

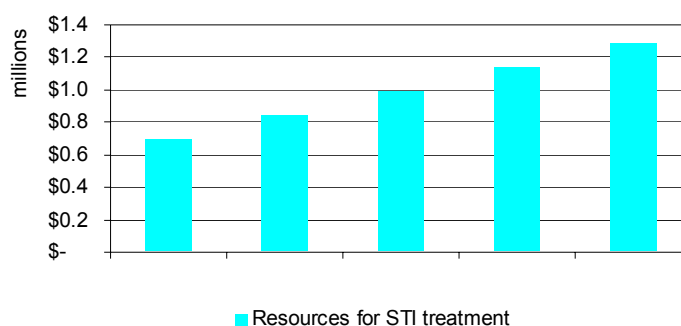


STI Interventions

- Increased access to quality STI services is one of the key objectives of Strategy 1. The activities aim to increase access to STI services among the low risk population as well as among high risk groups such as direct and indirect sex workers (SWs). The resource requirement for the latter has been incorporated into the cost estimation for the specific groups. Table 2 show the assumptions used in the estimation of resource needed for expanding access to STI services for the low risk population. The implied resource requirements are summarized in Figure 18. It is estimated that in 2006 US\$0.692 million will be required, increasing to US\$1.279 million in 2010.

Table 8: Assumptions for STI interventions

Population size	2004	2010
Number of cases of treatable STIs - male	160,756 ⁷⁹	
Growth rate in number of treatable STIs - male	0.0 ⁸⁰ %	
Number of cases of treatable STIs - female	1211,911 ⁸¹	
Growth rate in number of treatable STIs - female	0.0%	
Percent of STIs that are symptomatic - males	60%	
Percent of STIs that are symptomatic - females	40%	
Coverage	2004	2010
Percent males receiving STI receiving treatment	4% ⁸²	50% ⁸³
Percent females receiving STI receiving treatment	28% ⁸⁴	50% ⁸⁵
Unit costs	USD	
Cost per STI treated in clinics	\$20.73 ⁸⁶	

Figure 18: Resources required for STI interventions (2006-2010)

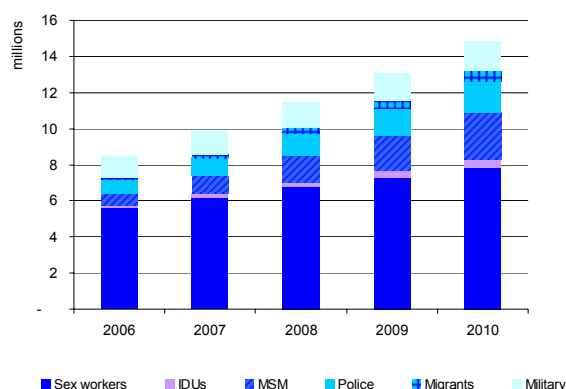
Condom Provision (public and social marketing)

- Many of the targeted interventions also include condom distribution and therefore condoms are reflected in the resource estimates reported under the respective sections. The data inputs used to calculate the condom requirement among general population (in marital and casual sex) are shown in Table 9. To the extent possible, care was taken to avoid or minimize double-counting and for this reason the condom requirements among the vulnerable groups (military, migrants and police) were subtracted from the estimate. The resultant condom requirement for casual and marital sex is 21.5 million in 2006 and 30.3 million in 2010, translating into a resource requirement of US\$4.745 million in 2006 and US\$6.676 million in 2010.

Table 9: Assumptions for condom requirements

Behavioral variables	2004	2010
Percent of population (15-49yrs) sexually active	71% ⁸⁷	
Percent of males (15-49yrs) in married/ steady partnerships	75%	
Percent of males (15-49yrs) in casual sexual partnerships	25%	
Number of sex acts for casual partners per year	87	
Number of sex acts with marital or steady partners per year	52	
Percent of condoms distributed through social marketing	80% ⁸⁸	
Percent using condoms in marital sex or steady partnerships	2%	5% ⁸⁹
Percent using condoms in casual sex	31% ⁹⁰	70% ⁹¹
Unit costs	USD	
Cost per male condom distributed by the public sector	\$0.08	
Cost per condom distributed by social marketing	\$0.25 ⁹²	

Figure 19: Condom requirement by risk group (2006-2010)



Blood Safety

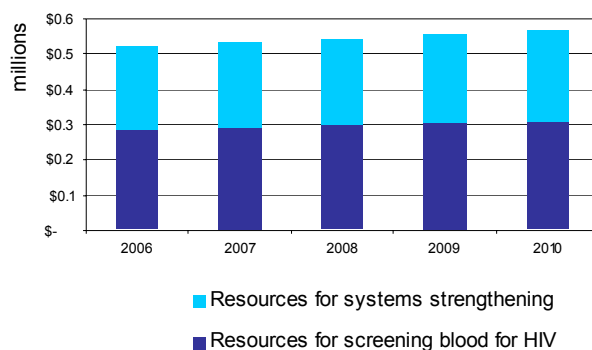
- Under the heading of blood safety the NSP2 identifies two types of activities: (1) ensuring that 100 percent of blood is screened for HIV, and (2) improving recruitment and retention of blood donors. The assumptions in
- Table 10 were used to estimate the resources required for blood safety.

Table 10: Data inputs for Blood Safety

Population size	2004	2010
Blood units required per 1,000 people	2.10 ⁹³	
Coverage	2004	2010
Percent of units of blood for transfusion tested - urban	100%	100%
Unit costs	USD	
Cost of screening a unit of blood for HIV	10.00 ⁹⁴	
Cost per unit of blood for systems strengthening	8.22	

- Figure 20 shows a breakdown of the resource requirements for improvements of blood safety. It is estimated that in 2006 a total of US\$0.567 million will be needed for blood safety, increasing to US\$0.522 million in 2010. Roughly equal shares are needed for HIV screening and systems strengthening, as identified in the NSP2.

Figure 20: Resource required for Blood Safety



Universal Precautions

- This part of the analysis estimated the need for universal precautions using an indicator measuring the use of clinical procedures requiring universal precautions in a particular country. The indicator found to be most appropriate is the number of hospital beds. The assumptions used in the estimation of resource needs for universal precautions are shown in Table 11. The estimated resources required for universal precautions in Cambodia increase from US\$3.581 million in 2006 to US\$4.198 million in 2010.

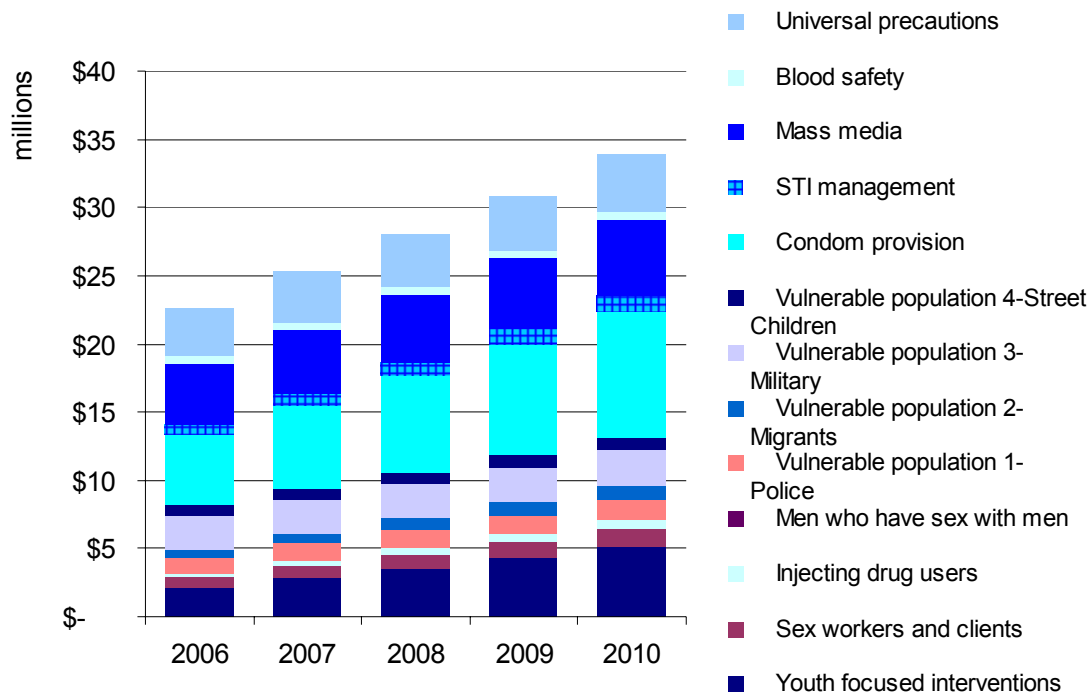
Table 11: Data inputs for Universal Precautions

Population size	2004	2010
Hospital beds per 1000 population	2.10 ⁹⁵	
Coverage	2004	2010
Percent of health workers covered	80% ⁹⁶	90%
Unit costs		
Annual cost per hospital bed	\$150 ⁹⁷	

Total Resource Requirements for Strategy 1

- The resources required for the interventions identified under Strategy 1 are summarized in Figure 21. Because some prevention interventions are captured under Strategy 2, the resources needed for Strategy 1 do not strictly coincide with the resources required for prevention. Resource needs increase from approximately US\$22.687 million in 2006 to US\$33.857 million in 2010.

Figure 21: Resources required for Strategy 1



- As stated at the introduction to this Technical Note, it should be noted that the evaluation of the relative merit of the various targets set in the NSP2 is beyond the purview of this analysis. However, this an important step that needs to follow the preliminary estimation of resource requirements.

Resource Requirements for Strategy 2: Care and Treatment⁹⁸

Strategy 2: Increased coverage of effective interventions for care and support, additional interventions developed.

Voluntary and Confidential Counseling and Testing

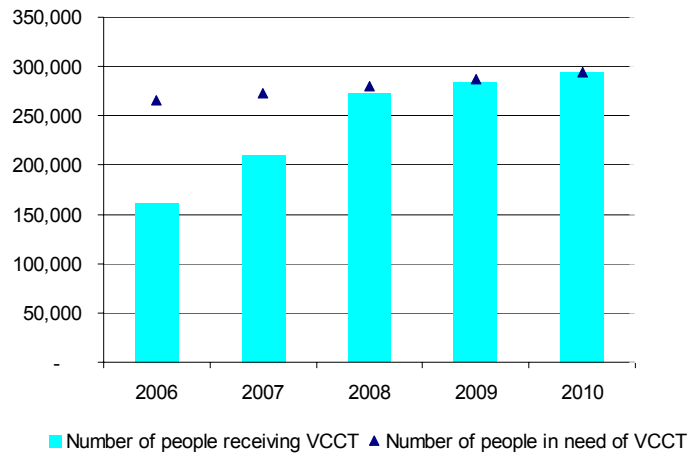
- The promotion of voluntary and confidential counseling and testing (VCCT) among high risk groups as well as the general population are identified in Strategy 2 alongside the care and treatment interventions. The assumptions that underpin this part of the analysis are shown in Table 12. The results are shown in Figure 22 and Figure 23.
- The approach used in the analysis, also endorsed by UNAIDS Reference Group on AIDS Economics, is that the percent of the population requiring VCCT is estimated to be two times the adult prevalence. Using this approach it is estimated that in 2006, a total of 265,263 individuals will be reached with VCCT services. The total number of people reached with VCCT services in 2010 is projected to increase to 294,450 in 2010 (Figure 22).

Table 12: Assumptions for VCCT

Population size	2004	2010
Percent of adult population needing VCCT annually	3.8% ⁹⁹	
Coverage	2004	2010
Percent of adult population receiving VCCT each year	1.3% ¹⁰⁰	3.8% ¹⁰¹
Percent of people needing VCCT receiving VCCT	33% ¹⁰²	100%
Number of VCCT sites	96 ¹⁰³	200
Unit costs	USD	
Cost per VCCT client at a new site	\$29.77 ¹⁰⁴	
Cost per VCCT client at an existing site	\$15.40 ¹⁰⁵	

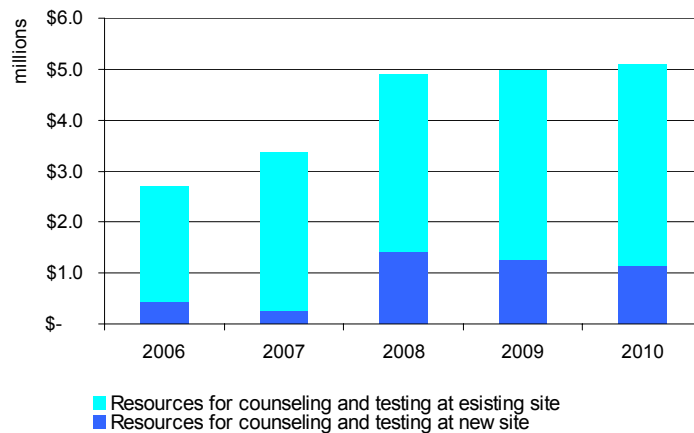
- The unit cost assumptions in Table 12 allow for cost variation, depending on whether the service is provided at a new VCCT site or an existing site. This is because the start-up costs are substantial (equipment, renovation, training), and the unit costs differ by nearly 100 percent (US\$29.77 for VCCT at a new site, compared to US\$15.40 at an existing site).

Figure 22: Target population reached with VCCT services



- The total resources required for VCCT services are estimated to be US\$2.706 million in 2006, increasing at an average annual rate of 23 percent to US\$5.085 million in 2010 (Figure 23).

Figure 23: Resources required for VCCT



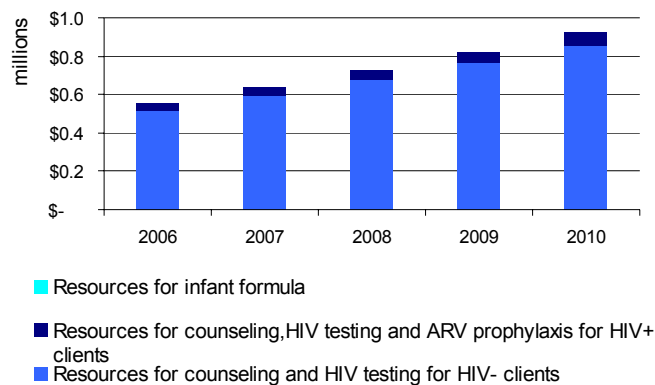
Prevention of Mother-to-Child Transmission

- Table 13 shows the assumptions used in the estimation of the resource requirements for PMTCT. The assumptions are largely informed by the program data for 2004 and 2005 from the PMTCT program.
- The resource requirements for PMTCT were estimated based on the data inputs (Table 13). It is estimated that in 2006, US\$0.557 million will be required, and the amount will increase to US\$0.922 million in 2010. By far the largest proportion of the resources is required for counseling and testing, despite the low unit cost of this activity (US\$15.40 per person counseled and tested).

Table 13: Calculation of resources for PMTCT

Population size	2005	2010
Number of women attending at least one ANC visit at a PMTCT site	32,865 ¹⁰⁶	
Coverage	2004	2010
Percent of pregnant women attending ANC tested for HIV	28.4% ¹⁰⁷	60%
Percent HIV+ pregnant women receiving ARV prophylaxis	95.3% ¹⁰⁸	100%
Percent HIV+ pregnant women that receive infant formula	67.6% ¹⁰⁹	0% ¹¹⁰
Unit costs	USD	
Cost per woman receiving counseling and testing	\$15.40 ¹¹¹	
Cost per woman testing HIV+ and receiving ARV prophylaxis	\$56.09 ¹¹²	
Cost per woman of six months of infant formula	\$52.50 ¹¹³	
Cost of general systems strengthening per HIV+ woman	\$3.27 ¹¹⁴	

Figure 24: Resource required for PMTCT



Care and Treatment

- Under the heading care and treatment the following interventions are considered:
 - Home-based care
 - Treatment of opportunistic infections (including tuberculosis)
 - Anti-retroviral therapy (including laboratory testing, training, nutrition assistance)
- Before estimating the resources required for the various interventions, it was necessary to quantify the population in need of the various care and treatment interventions. The Spectrum Model, developed by the Futures Group¹¹⁵, was used for this estimation. Box 2 describes the specific assumptions used to create the Spectrum Projections for Cambodia. Access to PMTCT and ART influence HIV

prevalence and may explain slight differences between NCHADS estimates and the estimates resulting from the Spectrum analysis.

- The vehicle for delivering the care and treatment interventions listed above, as well as VCCT and PMTCT, is the innovative Continuum of Care framework. The Continuum of Care framework does not appear in this report as a separate intervention with associated resource requirements, because the results are disaggregated into the respective interventions that constitute the framework.

Box 2: Assumptions used in the Spectrum Projections

The following assumptions were used to create Spectrum projections for Cambodia:

- Adult HIV prevalence: 2003: 2.1%; 2004: 1.9%.
- Ratio of HIV+ females to males: 0.89 (this fraction coincides with 47% of HIV+ individuals being female).
- % of people with advanced HIV infection receiving ART: 46.8%.
- % of HIV+ pregnant women receiving PMTCT: 75.8%.
- PMTCT regimen: Nevirapine + AZT. The associated HIV transmission probabilities are: Base transmission (no PMTCT program): 32% and Transmission rate with PMTCT program: 17%. (If this PMTCT regimen is coupled with exclusive breastfeeding then the transmission rate is reduced to 2%, but because at the time of the analysis it was not clear that exclusive breastfeeding is being achieved, the transmission rate is left at 17%).

Source: NCHADS. 2005. *Progress Report for Opportunistic Infections and Anti-retroviral Treatment*. Phnom Penh: Ministry of Health.

- Palliative care is defined as pain and symptom management and psycho-social support for persons living with a terminal illness such as AIDS. The number of people needing care and support was calculated using the methodology described in Box 3. This methodology combines the approach used in the AIDS Impact Module of the Spectrum Model and the care and treatment section of the Resource Needs Module. Palliative care may be delivered through home-based care or hospice-based care. In Cambodia the predominant approach is through home-based care and PLWHA support centers (Mondul Mith Chouy Mith, MMM). Table 14 shows the assumptions for all the care and support interventions; the costs of health facility-based care interventions (such as consultation, treatment of opportunistic infections and prophylaxis for opportunistic infections) are also considered and listed separately.

Box 3: Calculation of the number of people needing treatment

Number of people needing care and OI treatment

- The population newly requiring care in a particular year is assumed to be equal to the number of HIV-positive individuals who are newly symptomatic during that year. The number of newly symptomatic adults is generally defined as the cohort of HIV-positive adults who would be expected to die of AIDS within 2 years, i.e., the number of HIV-positive adults 2 years prior to their death. One possible source for these data is the AIDS Impact Module (AIM). These data are obtained as output from the AIM in the Spectrum suite of models, which is available at <http://www.futuresgroup.com>.
- The median time from infection to death is assumed to be 9 years in developing countries (8.6 years for males and 9.4 years for females) and 11 years in industrialized countries. The value for the country can be imputed into the model. Survival times are assumed to follow a Poisson distribution in agreement with the available data. These survival periods refer to people who are not receiving treatment with antiretroviral drugs (AIM Manual, page 13).

Palliative care

- The number of people receiving palliative care has the following three components:
- Component 1: Individuals newly showing AIDS symptoms who are not on ART
 - If the individuals on ART (expressed as coverage percentage) exceed the coverage percentage for palliative care then no people require palliative care under this component.
 - If coverage of palliative care exceeds coverage of ART, then the number of people requiring palliative care under component 1 is the difference between the two coverage percentages multiplied by the number of people newly showing AIDS symptoms.
- Component 2: People who are on ART but who will die in a particular year
 - People on ART have some probability of dying in each year that they are on ART. This probability is calculated using a Poisson distribution with two parameters: the average duration of ART and the life expectancy of people on ART. So, for each previous year when people started ART a Poisson distribution is applied to determine the probability that a particular cohort of people on ART will die.
- Component 3: People who have failed on first line ART and do not have access to second line ART
 - Not all people who fail to progress on first line ART have access to second line ART.

ART

- In the base year, the treatment population is estimated to equal the estimated AIDS death cohort 2 years hence. For each of the following years, the treatment population is estimated to equal the estimated AIDS death cohort for the following year plus the carry-over of populations receiving prophylaxis for the prevention of OI and ARV.
- The carry-over is calculated using a Poisson distribution for the probability of death in a given year, with the country-specific life expectancy for people with ARV and 2 years for all others. This is because the average survival is adjusted for each country according to available healthcare infrastructure, using a maximum survival of 7 years as reference for high-quality care.
- The percentage of people on ARV therapy who also take prophylaxis for OI is discussed under the previous section on OI prophylaxis.

Link between ART and prophylaxis for OI

- People needing ongoing OI prophylaxis include those who are newly symptomatic, those who were receiving OI prophylaxis in the previous year, and a proportion of people on ART who require OI prophylaxis despite being on ART.
- By definition, the number of newly symptomatic individuals is calculated as the number of people who will die of AIDS 2 years later (in the absence of ART). The default value of the expected years of life with prophylaxis for OI is 3 years. This assumes that an additional year of life is gained due to prophylaxis because OI prophylaxis is assumed to add 1 year of additional life. Therefore, newly symptomatic people initiating OI prophylaxis without ARV are assumed to live 3 years on average using a Poisson distribution to determine the probability of death in a given year.
- Once CD4 counts reach a certain level due to antiretroviral therapy, it is recommended that they cease prophylaxis for OI. Thus, only a certain percentage of those on ARV therapy need to take prophylaxis as well as ARV therapy. The default value is 50 percent.

Futures Group. 2005. *Resource Needs for HIV/AIDS: Model for Estimating Resource Needs*. Glastonbury CT: Futures Group. [Hwww.futuresgroup.com](http://www.futuresgroup.com)

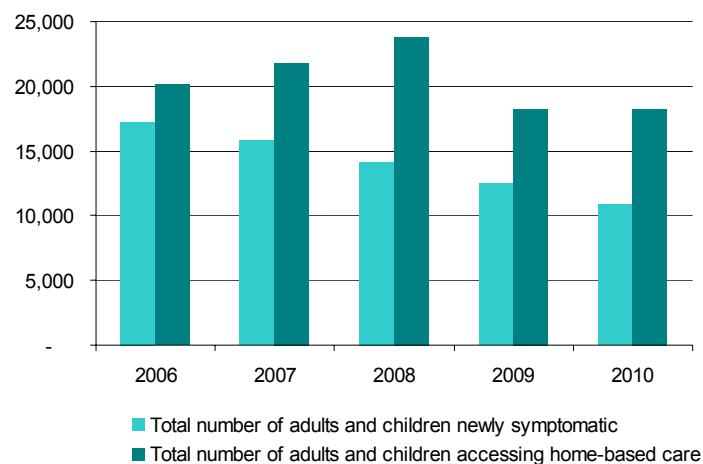
Table 14: Calculation of the number of people needing and accessing care, support and treatment

Home-based care and Mondul Mith Chouy Mith		
Population size and Coverage	2004	2010
Adults newly showing HIV/AIDS symptoms	18,482	10,414
Children newly showing HIV/AIDS symptoms	646	411
Total number of adults and children newly showing HIV/AIDS symptoms	19,128 ¹¹⁶	10,825
Number of home-based care (HBC) teams	178 ¹¹⁷	244
Average number of PLWHAs per HBC team	75 ¹¹⁸	
Unit Costs	US\$	
Cost per patient receiving home-based care	\$46.32 ¹¹⁹	
Treatment and Prophylaxis for Opportunistic Infections		
Population size and Coverage	2004	2010
Percent of people on ART in need to OI prophylaxis	50%	
Percent of pop. in need receiving OI prophylaxis	40%	80%
Population in need receiving OI treatment	40%	80%
TB prevalence (per 100,000)	709 ¹²⁰	
HIV prevalence among TB cases	13% ¹²¹	
Unit costs	US\$	
Cost of OIs treated at health centers	\$196.72 ¹²²	
Cost of TB treatment	\$120 ¹²³	
Number of people needing and accessing ART		
Coverage	2004	2010
Percent with access to 1 st line treatment	26%	70%
Other variables:	2004	
Minimum expected years of life with ART	5	
Survival of those not on ART	2	
Average time on ARV for those currently on ART	5	
Adults on 1 st line ART in 2004	11,284	
Children on 1 st line ART in 2004	1,071	
Adults on 2 nd line ART in 2004	100	
Children on 2 nd line ART in 2004	6	
Percent on generic ARTs	99%	
Unit Costs	US\$	
	2004	2010
Generic ART	\$328 ¹²⁴	281
Branded ART	\$2,640 ¹²⁵	2,640
Second-line therapy	\$1,365	1,092
Training		
	2004	
Maximum Patients Served by 1 FTE	20	
Percent time a physician spends caring for AIDS patients	50%	
Length of training (weeks)	1	
Frequency of re-training	Every 2 years	
Unit costs	US\$	
Cost per training week	\$33	

Home-based care and Support

- Figure 25 shows the number of adults and children needing care and support, and those accessing these services. In 2006 it is estimated that 20,119 adults and children will have access to care and support through home-based care and MMM¹²⁶. Note that the difference between those people with HIV newly becoming symptomatic and those accessing home-based care is decreasing despite scaling up of home-based care. This is largely because more people are on first- and second-line ART (Figure 28). The resources required for palliative care and MMM are approximately US\$1 million annually between 2006 and 2010 (Figure 26).

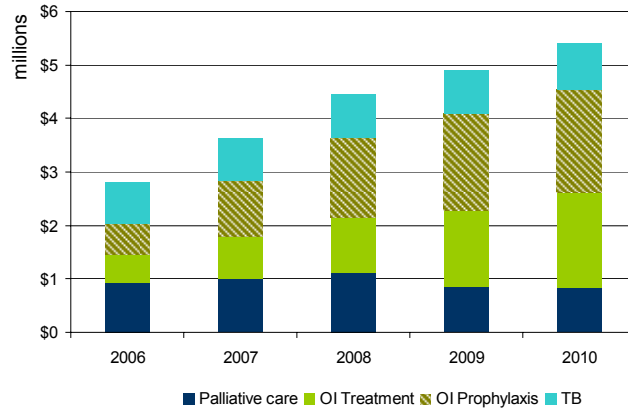
Figure 25: Number of PLWHAs accessing home-based care and MMM



Prophylaxis for and Treatment of Opportunistic Infections

- This section deals with facility-based costs of opportunistic infection (OI) prophylaxis¹²⁷ and treatment of OIs. Figure 26 shows the resources required for care and support, prophylaxis for and treatment of opportunistic infections — it is estimated that in 2006 US\$1.105 million will be needed increasing to US\$3.702 million in 2010. Roughly equal shares will be devoted to OI treatment and OI prophylaxis.
- A specific opportunistic infection that requires explicit mention is tuberculosis. According to WHO (2006) TB prevalence for Cambodia is 709 per 100,000. According to the same database the HIV prevalence among adult TB patients is 13 percent. This information, coupled with the annual adult population was used to arrive at an annual number of patients who are HIV positive and have tuberculosis. The resources required for tuberculosis prevention and management among PLWHAs is estimated at US\$0.772 million in 2006 and increases to US\$0.857 million by 2010 (Figure 26).

Figure 26: Resource requirements for care, OI treatment and OI prophylaxis



Anti-retroviral therapy and laboratory testing

- The parameters used in calculating the costs of antiretroviral drugs are also shown in Table 14. The results of calculating the number of PLHAs who are newly symptomatic using the approach described in Box 2 and Box 3 are shown in Figure 27. As described in Box 3, the number of people on ART in any year is a combination of people newly starting ART and those on already ART surviving from previous years, as shown in Figure 28.

Figure 27: Number of people needing and accessing care and treatment

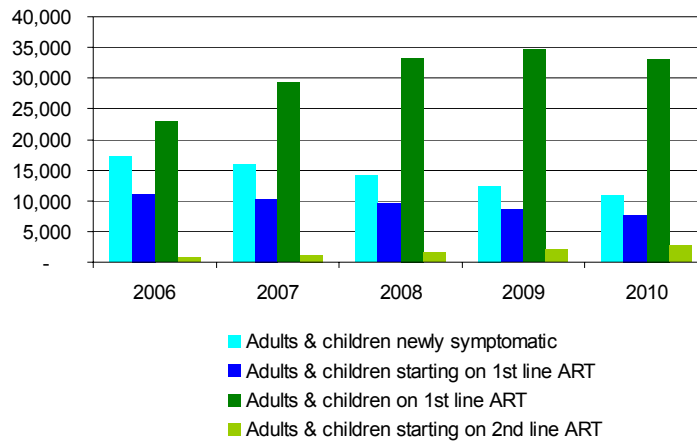
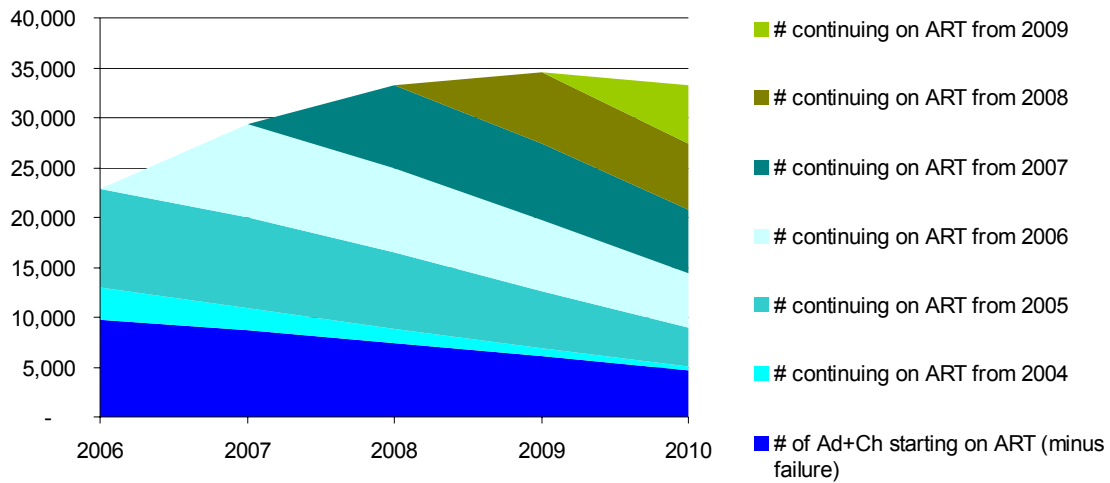
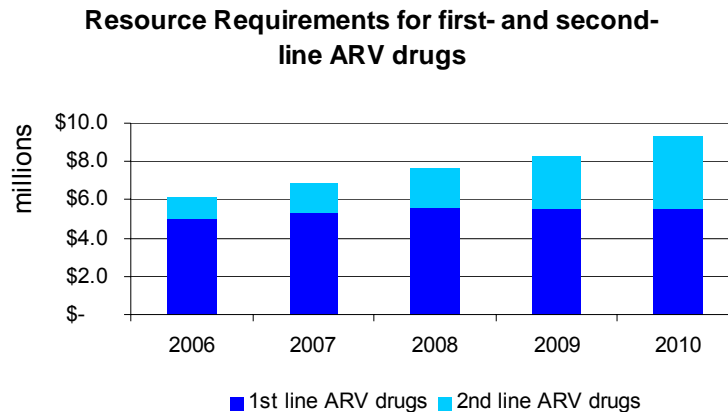


Figure 28: Number of people on ART (2004–2010)



- Figure 29 shows the resource requirements for ARV drugs. An estimated US\$9.059 million will be needed for ARV drugs in 2006 and this will increase to US\$8.287 million by 2010. In 2010, 60 percent of the total resource requirement for ARV drugs is expected to be spent on first line ARV drugs (Figure 29).

Figure 29: Resource requirements for ARV drugs



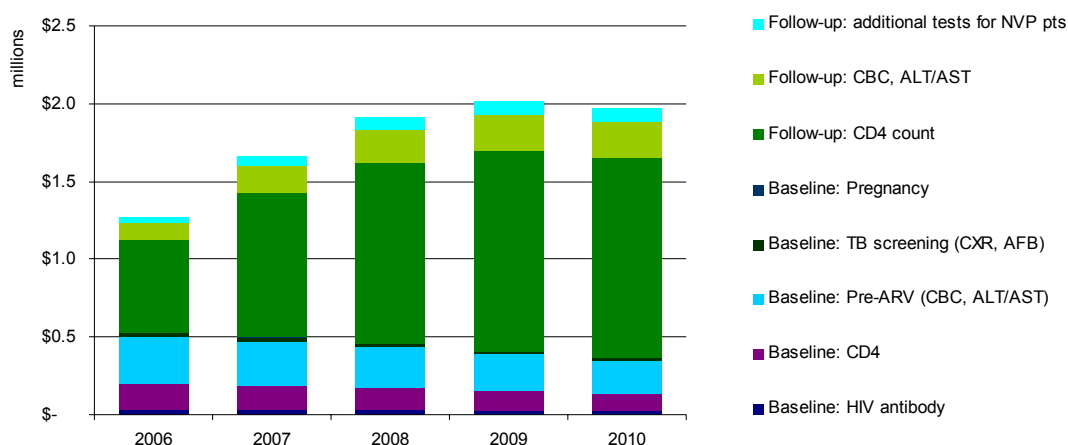
- The assumptions regarding the required laboratory tests and associated unit costs that underpin the analysis are listed in Table 15. The laboratory tests listed are guided by the ART guidelines¹²⁸ developed by NCHADS. The baseline tests are applied to the number of PLHAs starting on ART and follow-up tests are applied to the PLHAs continuing on ART. The resource needs estimation also took into account the need to strengthen the laboratory system to support the scaled up access to ART and to ensure the necessary level of quality assurance.¹²⁹

Table 15: Laboratory testing assumptions¹³⁰

	Number of tests	US\$
Baseline laboratory tests		
HIV antibody test	1	\$3.2
CD4 count	1	\$15.0
Other Pre-ARV tests (e.g. CBC, ALT/AST)	2	\$13.5
TB screening (CXR, AFB)	1	\$2.4
Pregnancy (women only)	1	\$0.8
Routine follow-up laboratory tests		
CD 4 count	3 ¹³¹	\$15.0
Routine lab tests (e.g. CBC, ALT/AST)	2	\$4.2
Routine lab tests: extra tests for NVP pts	1	\$2.9

- The total cost of laboratory tests are shown in Figure 30. In 2006, US\$1.636 million will be required for laboratory testing, increasing steadily as the number of people on ART increases to US\$2.069 million in 2010. The main driver of these costs is CD4 count tests. The number of people newly starting ART slows down over time, and this is why there is a leveling off of the ART laboratory costs for 2009 and 2010.

Figure 30: Costs of laboratory tests



Nutritional Support

- The success of antiretroviral therapy is strongly influenced by a patient's nutritional status. For this reason, nutritional support for a subset of all ART patients is often provided as part of a comprehensive ART program.

Table 16: Calculation of nutritional support requirements

Nutritional support		
Coverage	2004	2010
Percent Undernourished Child < 5	30%	30%
Percent Undernourished HIV+ adults	12%	12%
Unit costs	US\$	
Cost per person receiving nutrition supplements ¹³²	\$30	

Total Resource Requirements for Strategy 2

- Figure 31 shows the total resource requirements for Strategy 2, based on the approach and assumption described in this section. It is estimated that in 2006 US\$15.624 million will be needed. This is projected to increase to US\$33.857 million in 2010. The annual increase in resources required by intervention is shown in Table 17.

Figure 31: Resources required for Strategy 2

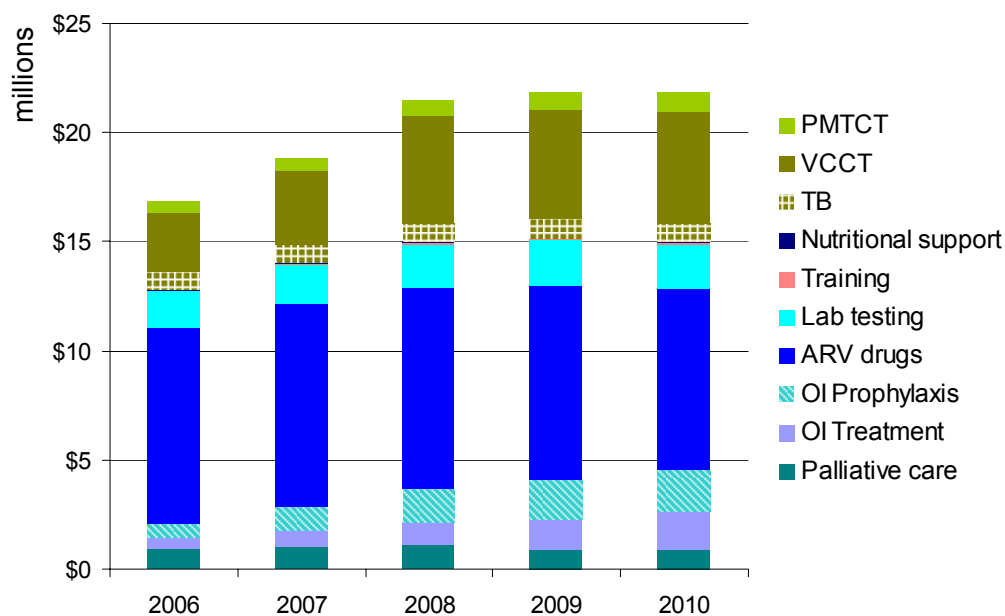


Table 17: Percentage increase in resources required for interventions under Strategy 2

	Percent change in resource requirement				
	2005-2006	2006-2007	2007-2008	2008-2009	2009-2010
Palliative care	4%	8%	9%	-23%	0%
OI Treatment	61%	46%	36%	38%	23%
OI Prophylaxis	388%	83%	41%	21%	8%
ARV drugs	-1%	3%	-1%	-4%	-7%
Lab testing	14%	13%	11%	10%	9%
Training	98%	6%	15%	5%	-2%
Nutritional support	56%	28%	14%	4%	-4%
TB	-6%	-10%	-14%	-18%	-24%
VCCT	40%	24%	45%	2%	2%
PMTCT	100%	15%	14%	13%	12%

Resource Requirements for Strategies 3: Impact Mitigation

Strategy 3: Increased coverage of effective interventions for impact mitigation, additional interventions developed.

Impact Mitigation Interventions targeting Children and Households affected by HIV/AIDS

- The approach used in this part of the analysis is based on collaborative work done by the Futures Group and UNICEF¹³³. Orphans are defined as children under the age of 18 that have lost one or both parents. An AIDS orphan is a child under 18 who has lost one or both parents to AIDS. Programming for orphan support should not distinguish between AIDS and non-AIDS orphans. For the purposes of this analysis, only AIDS orphans are used for the analysis¹³⁴. Definitions of vulnerability vary – the proportion of households living below the poverty line is used as an indicator of vulnerability in the analysis.
- Estimates of the number of orphans by age are the starting point for this analysis. Orphans and vulnerable children need many types of support including education, food, health care, shelter, clothing, economic support and psychosocial support. Some services, such as education and health care, may be provided free by the government or may require fees. Children's need vary by age and therefore estimates of the number of orphans and vulnerable children should be provided by age. The Spectrum Model, a demographic projection model developed by the Futures Group adapted for a country's HIV/AIDS situation, was used for this purpose. The estimated number of orphans by age group is summarized in Table 18.¹³⁵ Table 19 shows the other assumptions used in the estimation of resource needs for impact mitigation.

Table 18: Number of AIDS Orphans by age group

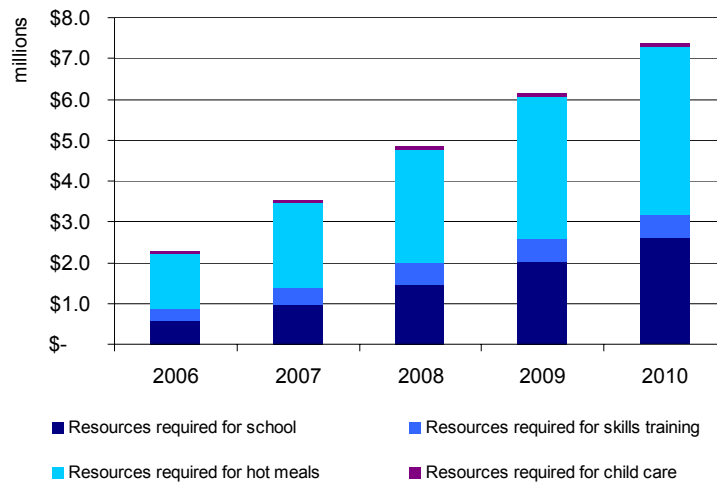
	2004	2005	2006	2007	2008	2009	2010
OVC 0-4yrs	27,224	24,813	23,271	22,191	21,066	19,790	18,409
OVC 5-9yrs	40,047	41,327	41,950	42,028	41,323	39,743	37,401
OVC10-14yrs	43,586	48,683	52,955	56,549	59,037	60,288	60,377
OVC15-17yrs	24,449	27,892	31,301	34,728	37,876	40,423	42,281

Table 19: Assumptions used in estimation of impact mitigation needs

Population size		
See Table 18		
Coverage	2004	2010
Percent receiving support for primary school		
Percent receiving support for secondary school	1%	70% ¹³⁶
Percent receiving skills training		
Percent receiving hot meals		
Percent receiving child care	1%	50% ¹³⁷
Unit costs ¹³⁸	USD	Range
Primary school (fees, uniforms, supplies, etc.)	\$60	(\$40 - \$100)
Secondary school (fees, uniforms, supplies, assessments)	\$180	(\$130 - \$300)
Skills training	\$85	(\$40 - \$150)
Food	\$1.00	(\$0.30 - \$1.30)
Childcare		
Health care	\$180	(\$30 - \$110)
Clothes	\$45	(\$30 - \$70)
Bedding	\$16	(\$9 - \$30)

- Figure 32 shows that in 2006 impact mitigation resource requirements total US\$2.260 million, increasing to US\$7.378 million in 2010. Assistance for school fees and related expenses and food are the major drivers of the required resources.

Figure 32: Resources required for Strategy 3



- This resource estimation does not accommodate the sectoral impact assessments mentioned in Strategy 3. These will be reflected under Strategy 6 dealing with research.

Resource Requirements for Strategies 4-7

Strategy 4: Effective leadership by government and non-government sectors for implementation of the response to HIV/AIDS, at central and local levels.

Strategy 5: Supportive public policy environment for the HIV/AIDS response.

Strategy 6: Increased availability of information for policy makers and program planners through monitoring, evaluation and research.

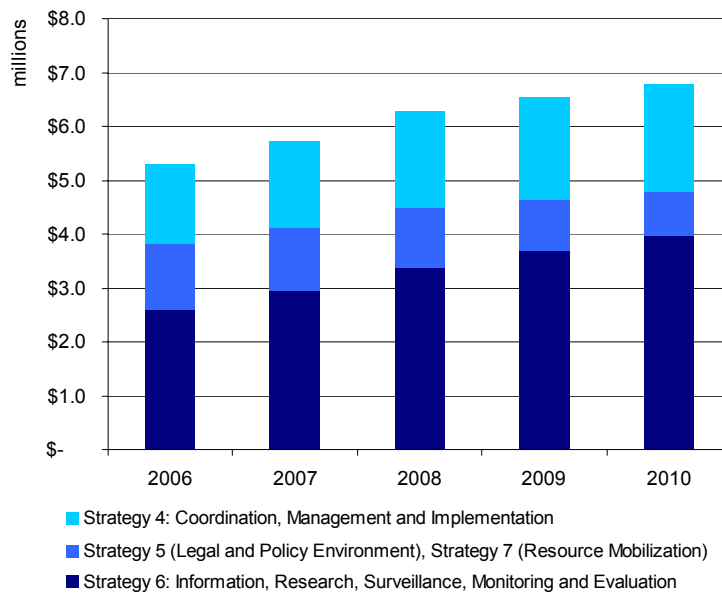
Strategy 7: Resource mobilization and funding

- The following strategies are addressed in this section:
 - Strategy 4: Coordination and Implementation
 - Strategy 5: Legal and Policy Environment
 - Strategy 6: Information, Research, Surveillance, Monitoring and Evaluation
 - Strategy 7: Resource Mobilization and Funding
- The activities captured in these strategies are typically hard to estimate because they do not lend themselves to the basic approach used in the Resource Needs Model, namely using three key variables: population size, coverage and unit costs. Therefore, these activities were costed in the Resource Needs Module by estimating the resources needed for these activities as a percentage of the direct program resources. This approach is often used in program budgeting when estimating resources needed for monitoring and evaluation or management overheads. While this approach is imperfect, none of the activities in these strategies are articulated with sufficient detail in order to allow for a detailed costing. The lack of detail in these activities is not unusual; the activities will evolve over time.
- Expenditure categories from the AIDS expenditure analysis that was done to calculate the resource availability, were used to calibrate the percentage of the direct program resources that should be assigned to strategies 4 through 7. Table 20 shows the estimated resource needs and the associated percentages.
- While the categories used in the model do not perfectly coincide with Strategies 4-7, the last column in Table 20 provides a sense, albeit impact, of the distribution of resource requirements by strategy. This is illustrated in Figure 33.

Table 20: Shares of resources needed for Strategies 4-7

	2006	2010	
Legal and policy environment	4.7%	2.0%	Strategy 5, 7
Management, Administration and Coordination	5.7%	5.0%	Strategy 4
Research	5.0%	5.0%	Strategy 6
Monitoring and Evaluation	5.0%	5.0%	
Resources Needed (US\$ millions)	5.277	6.777	

Figure 33: Resources needed for Strategies 4-7



Total Resource Requirement and Resource Gap Analysis¹³⁹

Total Resources Required

- Figure 34 and Figure 35 show the total resource requirement, based on the methodology and data inputs described in previous sections. The total resource requirement is estimated to be US\$47.117 million in 2006 and US\$69.877 million in 2010. The resource requirement by strategy is shown in Figure 34. Strategy 1 accounts for just under half (48 percent) of the total resource requirement in 2010. Strategies 2 and 3 respectively account for a third (31 percent) and a tenth (11 percent) of the total resource requirement. As illustrated in Figure 35, prevention (which includes VCCT and PMTCT) accounts for the largest share of the resources: US\$25.162 in 2006 and US\$41.026 in 2010, as shown Figure 34.

Figure 34: Total Resources required by Strategy (2006-2010)

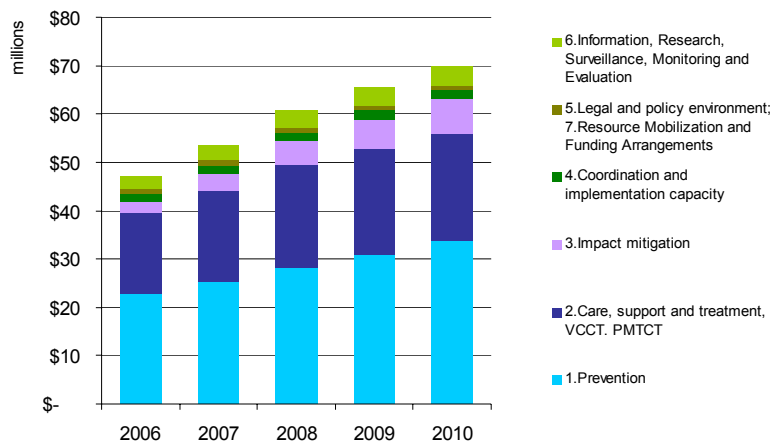
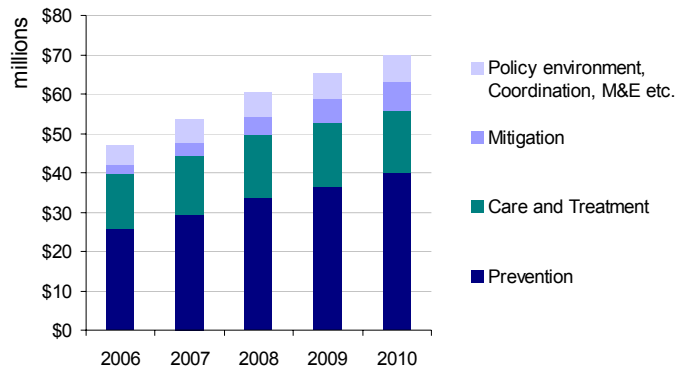


Figure 35: Total Resources required (2006-2010)



Resource Gap Analysis

- Given these estimates of resource needs for 2006 through 2010, the resource gap was calculated using the data on resource availability in 2005 and the commitments that had been made by donors and government. The resources available are summarized in Table 21¹⁴⁰ and the implied resource gap is illustrated in Figure 36.

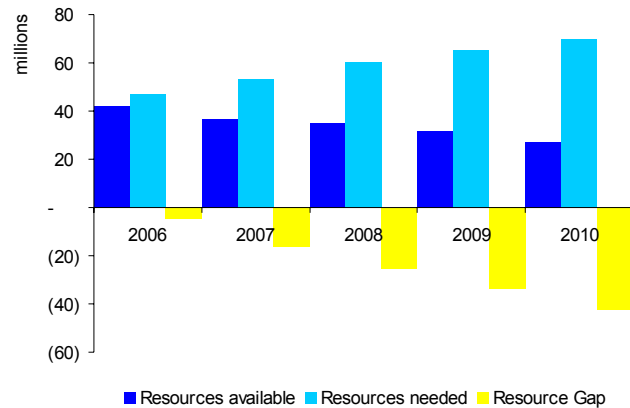
Table 21 : Resources available (2006-2010)

	2006	2007	2008	2009	2010
National Budget (NCHADS)	950,000	950,000	950,000	950,000	950,000
National Budget (NAA)	400,000	400,000	400,000	400,000	400,000
Sub-total government	1,350,000	1,350,000	1,350,000	1,350,000	1,350,000
ADB Grant (NCHADS)					
World Bank Grant (NCHADS)	400,000	400,000	400,000		
French Cooperation Grant					
DFID Grant to NCHADS	1,566,283	1,566,283	82,130		
DFID Grant to NAA	780,163	752,265	50,340		
DFID Grant to MoEYS	1,167,719	1,195,315	53,333		
DFID Grant to BBC	1,197,000				
DFID Grant (PSI)					
EU - Grant through ITM	1,500,000				
Research Consortiums (UNSW)					
CDC-GAP Grant (NCHADS, NIPH)	1,400,000	1,400,000	1,400,000		
USAID Grants to NGOs	13,800,000	13,800,000	13,800,000	13,800,000	13,800,000
Other NGOs	4,500,000	4,500,000	4,500,000	4,500,000	4,500,000
UNDP through NAA	3,000				
UNFPA					
EU/UNFPA					
WHO					
UNICEF	1,880,000	1,880,000	1,880,000	1,880,000	1,880,000
UNAIDS					
UNESCO					
ILO	143,333				
CIDA	450,000	450,000			
JICA					
Sub-total external	28,787,498	25,943,863	22,165,803	20,180,000	20,180,000
GFATM Round 1	4,429,136	0	0		
GFATM Round 2	3,277,602	2,859,118	3,370,011		
GFATM Round 4	4,397,492	6,700,603	8,330,852	9,947,627	5,544,723
GFATM Total	12,104,230	9,559,721	11,700,863	9,947,627	5,544,723
Total resources available	42,241,728	36,853,584	35,216,666	31,477,627	27,074,723

- Given the resources available (Table 21) it is estimated that 90 percent of the resources required will be met by the available resources. However, in 2010 only a

third (39 percent) of the resource requirement has been met based on the current commitments (Figure 36).

Figure 36: Resource Gap Analysis: (2006-2010)



- It is not enough to ask how much money is required to finance the interventions needed to respond to HIV/AIDS in Cambodia. An important ingredient not formally addressed in this analysis is implementation capacity. Implementation capacity is a particularly pertinent issue as the National Strategic Plan envisages substantial scaling up of the HIV/AIDS response, while at the same time HIV/AIDS is stressing the capacity of the health sector.

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- ¹ The GOALS Model software can be obtained from the website: www.futuresgroup.com.
- ² The Resource Needs Module was utilized to estimate the costs of reaching the goals stated at the United National General Assembly Special Session of HIV/AIDS in 2001, and is updated annually by the UNAIDS Finance and Economics Reference Group. Schwartlander et al. 2001. "Resource Needs for HIV/AIDS," *Science*, 292:2434-2436.
- ³ Futures Group. 2005. *Resource Needs for HIV/AIDS: Model for Estimating Resource Needs*. Glastonbury CT: Futures Group. www.futuresgroup.com.
- ⁴ The demographic projection in Spectrum has been adjusted based on the Cambodia Inter-Censal Population Survey (2004) obtained from http://www.nis.gov.kh/SURVEYS/cips2004/cips_statis.htm. The difference between total population estimate from CIPS and the Spectrum estimate is 0.01% and the difference for the share of the population aged 15-49 years is 1.4%.
- ⁵ USAID, UNAIDS, WHO, CDC and the POLICY Project/Futures Group. 2004. *Coverage of selected services for HIV/AIDS prevention, care and support in low and middle income countries in 2003*. Washington DC: Futures Group. <http://www.futuresgroup.com/Publications>.
- ⁶ FHI. 2005. "Costs of Facility-based Services in a Continuum of Care Program: the Moug Russey Experience (draft)". Phnom Penh: FHI.
- ⁷ Excludes HIV prevention interventions: PMTCT and VCCT.
- ⁸ Includes HIV prevention interventions: PMTCT and VCCT.
- ⁹ POLICY Project/Futures Group. 2005. "Tracking HIV/AIDS Resources in Cambodia." Phnom Penh: POLICY Project.
- ¹⁰ NCHADS. 2003. *Allocation of Funds for HIV/AIDS in the Health Sector*. Phnom Penh: Ministry of Health.
- ¹¹ In mapping the sexual entertainment services in 2004 by NCHADS BCC Unit NCHADS suggested a total number of 19,728 sex workers. This was divided into 15,000 direct sex workers and the rest (4,728) as indirect sex workers.
- ¹² In the absence of good historic trend data that can be used to inform assumptions about the future number of sex workers, the growth rate in the female adult population aged 15-49 years is usually used. Instead, the January 2006 Data Consensus Workshop suggested a zero growth rate to be more appropriate.
- ¹³ The January 2006 Data Consensus Workshop suggested that the coverage of FHI programs or NCHADS' outreach teams should be used (60%).
- ¹⁴ NSP2 target: 98% of sex establishments (as defined by the 100% condom use Program) have condoms available in 2010.
- ¹⁵ NCHADS target: 90% of brothel-based sex workers with access to appropriate STI services in 2008. In the analysis the value was kept constant at 90% through 2010.
- ¹⁶ The value is based on NCHADS data from Peter Godwin. Cost of reaching direct and indirect sex workers is here assumed to be equal, yet it is conceivable that indirect sex workers may be harder to reach, and that unit costs for outreach may be higher (Asia regional default: \$15.23-\$21.12).
- ¹⁷ The value is based on NCHADS Data from Peter Godwin (Asia regional default: \$0.10-\$0.34).
- ¹⁸ The value is based on NCHADS cost estimates from Peter Godwin (Asia Regional default: \$8.24-\$27.85).
- ¹⁹ Value is based on an average of 2 times per 5 night week.
- ²⁰ Value is based on an average of 1.5 times per 5 night week as used in Cambodia Working Group on HIV/AIDS Projection. 2002. *Projections for HIV/AIDS in Cambodia: 2000-2010*. Phnom Penh: NCHADS.
- ²¹ PSI 2005. *Happenings*, Phnom Penh: PSI.
- ²² This percentage is based on linear interpolation between the coverage for 2004 (60%) and the target of 98% by 2010 set in the NSP2.
- ²³ According Consultation Workshop suggestion 2% of adult male population is assumed to be MSM.
- ²⁴ Based on FHI (2002) finding that there are 1,500 MSM in Phnom Penh, representing about 40% of all MSM in Phnom Penh. For the rest of the country: 5,000 in each of 3 major centers

representing 40% of MSM in the rest of the country. The resultant number of MSM was calculated at 7,500. PSI suggests that this is still too high and the number of 3,500 was proposed for the number of visible MSM in Cambodia. FHI. 2002: *Sexual Behavior, STIs & HIV among men who have sex with men in Phnom Penh*. Phnom Penh: FHI.

²⁵ Calculation based on reported numbers of MSM reached by FHI & KHANA.

²⁶ Assumed to be equal unit cost for sex worker outreach and peer education (Asia regional default: \$15.23-\$21.12).

²⁷ Value based on NCHADS Data from Peter Godwin (Asia regional default: \$0.10-\$0.34).

²⁸ Value is based on an average of 1.7 sex acts per week. According to FHI (2002) the average number of male partners with whom respondents had anal sex is 1.72 per week. Value should be verified when STI Surveillance Study report is released.

²⁹ Estimates provided by KHANA.

³⁰ The UNAIDS Consensus estimates of the number of problem drug users in Cambodia 2004 is 3,000. This figure was endorsed by Graham Shaw, UNODC.

³¹ Suggestion by January 2006 Data Consultation Workshop.

³² This indicator refers to an intervention that combines HIV counseling and drug use counseling as this would save human and financial resources. Furthermore, it is consistent with the intention of the National Program for Mental Health (NPMH) to undertake HIV counseling in agreement with NCHADS for drug users, including IDUs. This is guided by the recommendation by Graham Shaw, UNODC.

³³ Calculation based on Mith Samlanh Annual Report for 2004 (Mith Samlanh. 2004. *Annual Report – 2004*. Phnom Penh: Mith Samlanh).

³⁴ NSP2 Target.

³⁵ UNAIDS Consensus estimates.

³⁶ Drug Substitution not mentioned as an intervention in the NSP2.

³⁷ Literature review of interventions targeting IDUs in developing countries (mainly in East, South East and Central Asia). Asia regional defaults: \$22.33-\$44.82.

³⁸ Ibid. Asia Regional Default: \$0.17-\$0.37.

³⁹ Ibid. Asia regional defaults: \$292-\$587.

⁴⁰ No available data. Estimate from Regional data.

⁴¹ Mith Samlanh's 2004 Harm Reduction Report

⁴² Calculation based on Mith Samlanh Annual Report for 2004 (Mith Samlanh. 2004. *Annual Report – 2004*. Phnom Penh: Mith Samlanh).

⁴³ Estimate based on Mith Samlanh's Annual Report and adjusted for coming to scale of Mith Samlanh's programs 9(Mith Samlanh. 2004. *Annual Report – 2004*. Phnom Penh: Mith Samlanh).

⁴⁴ Recommendation from January 2006 Data Consultation Meeting.

⁴⁵ Adult male population growth rate used because drug users are predominantly male.

⁴⁶ Literature review of interventions targeting IDUs in developing countries (mainly in East, South East and Central Asia). Lower bound estimate used. (Asia regional default: \$22.33=\$33.42).

⁴⁷ No available data. Estimate from Regional data.

⁴⁸ Calculation based on Mith Samlanh Annual Report for 2004 (Mith Samlanh. 2004. *Annual Report – 2004*. Phnom Penh: Mith Samlanh).

⁴⁹ Following the recommendation by Graham Shaw, UNODC.

⁵⁰ Obtained from Dr. Hy Someth, HIV/AIDS focal person for the Ministry of Interior

⁵¹ Assumed to be equal to adult population growth rate.

⁵² Obtained from Dr. Hy Someth, HIV/AIDS focal person for the Ministry of Interior

⁵³ NSP2 target.

⁵⁴ Median of regional default for employment-based interventions. (Asia regional default: \$4.14-\$4.84).

⁵⁵ Assumed to be once a week.

⁵⁶ This figure comprises migrant factory workers, workers bound for South Korea, Malaysia and Saudi Arabia, migrant couples, long distance drivers, seafarers and migrant workers in Thailand. Only male workers are included in the estimate.

⁵⁷ Recommendation from December 2005 Data Consensus Workshop.

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- ⁵⁸ National Institute of Statistics. 2003. *Statistical Yearbook - 2003*. Phnom Penh: National Institute of Statistics.
- ⁵⁹ Value was set at 0 percent because no growth in military is anticipated (Dr. Tan Sokhey, HIV/AIDS focal person for the Ministry of National Defense).
- ⁶⁰ Obtained from Dr. Tan Sokhey, HIV/AIDS focal person for the Ministry of National Defense
- ⁶¹ NSP2 target.
- ⁶² Assumes 1 sex act per week with partner and 30 percent of this total sex acts is with a casual partner (Suggestion from January 2006 Data Consultation Workshop).
- ⁶³ Percentage condom use set to match the fact that Department of National Defense procured 1 million condoms in 2004.
- ⁶⁴ Personal communication from David Harding, Mith Samlanh.
- ⁶⁵ Calculation based on average number of youth reached by Mith Samlanh.
- ⁶⁶ MOEYS. The indicator is gross enrollment rate and reflects the number of children in primary school as a percentage of primary school aged children. The ratio exceeds 100% because some children are older than primary school age range.
- ⁶⁷ MOEYS. Same explanation as above.
- ⁶⁸ MOEYS.
- ⁶⁹ MOEYS.
- ⁷⁰ NSP2 target.
- ⁷¹ MOEYS.
- ⁷² NSP2 target.
- ⁷³ MOEYS.
- ⁷⁴ MOEYS.
- ⁷⁵ No data are available according to Dr. Kim Sanh. Estimate deduced from expenditure data for 2004.
- ⁷⁶ The value is based on data obtained from MOEYS. Between 4,000 and 5,000 teachers were trained in 9 provinces in 2003/2004 divided by 650,000 secondary level students in 2005.
- ⁷⁷ Cost calculated based on expenditure in 2004 on school-based interventions targeting youth. Estimated value is consistent with regional defaults (Asia regional default: \$35.27-\$199.01).
- ⁷⁸ No data available. The value is the median of regional defaults (Asia regional default: \$8-\$10.81).
- ⁷⁹ This is based on 4.9% STI prevalence rate for police multiplied by the number of males in the 15-49 age group.
- ⁸⁰ Set at zero because population growth is taken into account when multiplying prevalence by the number of adult males for each year.
- ⁸¹ This is based on 6.1% STI prevalence for women in reproductive health clinics multiplied by the number of females in the 15-49 age group. Participants at the December 2005 Data Consensus Workshop and the January 2006 Data Consultation Workshop suggest that this may be too high but no alternate data were available or offered.
- ⁸² According to NCHADS STI Unit the number of male STI cases treated: 3,795. Coverage is calculated as a % of symptomatic STI cases.
- ⁸³ NSP2 target.
- ⁸⁴ According to NCHADS STI Unit the number of female STI cases treated: 23,676. Coverage is calculated as a % of symptomatic STI cases.
- ⁸⁵ NSP2 target.
- ⁸⁶ NCHADS cost estimates from Peter Godwin (Asia Regional defaults: \$8.24-\$27.85).
- ⁸⁷ From PSI's 2003 KAP survey. This survey covered 5 provinces and Phnom Penh.
- ⁸⁸ Value based on personal communication from Ms. Jacqueline Devine, Deputy Director, PSI Cambodia.
- ⁸⁹ NSP2 target: 5% of married women report consistent condom use.
- ⁹⁰ From BSS: % condom use with sweethearts: police: 41.2%; moto-taxi: 27.3%; military: 25% (from presentation on BSS trends).
- ⁹¹ Set equal to the target condom use set for vulnerable groups (military, police and migrants).
- ⁹² Asia Regional Default: \$0.12-\$0.45
- ⁹³ UNAIDS. 2004. *Report on the Global AIDS Epidemic 2004*. Geneva: UNAIDS .

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- ⁹⁴ Median of Asia regional defaults: \$3.76-\$18.22.
- ⁹⁵ World Bank HPN database (www.worldbank.org).
- ⁹⁶ The data consensus workshop participants recommended this figure.
- ⁹⁷ For countries with data available the median annual cost is \$150 with a range of \$60 (lower quartile) to \$380 (upper quartile).
- ⁹⁸ Strictly voluntary counseling and testing and PMTCT are prevention interventions, but are included here because their implementation is within the health system.
- ⁹⁹ UNAIDS M&E Officer agrees with the assumption of doubling the HIV prevalence (1.9%) to represent the number of people needing VCCT services.
- ¹⁰⁰ Actual number of clients for 2004 was 82,521. VCCT Unit, NCHADS. This number expressed as a percentage of total adult population is 1.2%.
- ¹⁰¹ The target set by NCHADS for 2008 is 3.7%. The target of 3.8% was set for 2010.
- ¹⁰² Calculated as 1.2% of adult population receiving VCCT divided by 3.8% of population needing VCCT.
- ¹⁰³ Source: 3rd Quarter data, NCHADS 2005. Data for 2005: 106 centers and target for 2006 is 117 centers.
- ¹⁰⁴ FHI costing of COC in Moug Russey: \$29.29 for total unit cost and \$15.40 for recurrent systems. (Asia regional default: \$10.58-\$23.28).
- ¹⁰⁵ Ibid.
- ¹⁰⁶ Data collected by NCHADS PMTCT Program in 2005.
- ¹⁰⁷ As of 2004, 9,350 women out of 32,865 pregnant women tested for HIV in 8 provinces.
- ¹⁰⁸ There were 191 women who were HIV positive in 2004 of which 182 received ARV prophylaxis.
- ¹⁰⁹ In 2004 123 infants born to 182 HIV positive pregnant women started on replacement feeding.
- ¹¹⁰ According to the January 2006 Data Consultation meeting the 2010 value should be set at zero because the official policy is to encourage breastfeeding. This seems slightly inconsistent with the fact that two thirds of infants were receiving infant formula in 2004.
- ¹¹¹ Unit cost assumed to be equal to cost of counseling and testing for VCCT.
- ¹¹² The cost derived from the Moug Russey Costing. Only one regimen, single-dose nevirapine was costed, although the analysis is able to accommodate more than one regimen. In the data collected by the PMTCT Program only reference to nevirapine regimen is made. The Asia Regional Defaults: \$5.00-\$50.00.
- ¹¹³ Asia regional defaults: \$50-\$55
- ¹¹⁴ This is the unit cost that accounts for the difference between actual PMTCT spending in 2004 and the resource estimate for 2004 without the systems strengthening.
- ¹¹⁵ The software for the Spectrum Model (version 2.39) is available at: www.futuresgroup.com.
- ¹¹⁶ These estimates the result of the methodology described in Box 2 and Box 3.
- ¹¹⁷ NCHADS (2005) Progress Report, p3. Based on the same report, the number of HBC teams for 2005 was 261.
- ¹¹⁸ According to the NCHADS AIDS Care Unit, a HBC Team covers about 50 to 100 PLWHAs. Average value of 75 was used in the calculations.
- ¹¹⁹ Value based on expenditure in 2005 on HBC and MMM, including strengthening of community-based services.
- ¹²⁰ WHO. 2006. Global TB Database.
<http://www.who.int/GlobalAtlas/predefinedReports/TB/index.asp?strSelectedCountry=KH>.
- ¹²¹ Ibid.
- ¹²² From FHI study in Moug Russey. In a similar range as estimate for Thailand (\$151) and Vietnam (\$172).
- ¹²³ This cost includes the costs of diagnosis, drugs for treatment and system strengthening.
- ¹²⁴ Costs are similar to those used in GFATM Round 5 proposal. Costs between 2006-2010 assumed to remain constant at 2006 costs. Note that these are drug costs only.
- ¹²⁵ PEPFAR estimate.
- ¹²⁶ Note that the number of adults and children needing palliative care is directly linked to the number of people on ART (as described in Box 3). Those who are on ART and not expected to

require care and support except for in the last year of life; this is included in the total number of people expected to access care and support shown in Figure 25.

¹²⁷ Examples of the most common OI prophylaxis are: Cotrimoxazole (to protect against many of the causes of pneumonia and diarrhea), and Isoniazid (to prevent active tuberculosis).

¹²⁸ NCHADS. 2003: National Guidelines for the use of Antiretroviral Therapy in Adults and Adolescents. Phnom Penh: Ministry of Health.

¹²⁹ The estimation of the resource needs for laboratory system strengthening and quality assurance was based on the R5 GFTAM proposal under "Objective 1 - Service delivery area: Lab quality and control system". It was assumed that a once-off investment of \$300,000 will be needed for equipment and in subsequent years, 5% of the requirements for laboratory testing will be required for quality assurance.

¹³⁰ NCHADS ART guidelines identify tests in three categories of tests: "essential", "recommended" and "optional". The tests in the categories "essential" and "recommended" in were included in the costs analysis.

¹³¹ Guidelines recommend 3-6 monthly CD 4 counts for monitoring, suggesting between 2-4 tests per year. The mean number was selected, i.e., 3 CD4 counts per person in each follow-up year a PLHA is on ART.

¹³² While this cost is applied to the number of people needing nutrition supplements in any one year it is not assumed that the person will need supplements for the full year.

¹³³ J Stover, L Bollinger, N Walker, R Monash. Resource needs to support orphans and vulnerable children in sub-Saharan Africa, forthcoming.

¹³⁴ This can be changed if necessary.

¹³⁵ The Spectrum projections have to be repeated with updated AIDS estimates. Also orphan estimates have to be cross checked with other estimates of the number of AIDS orphans.

¹³⁶ NSP2 target: 70% of OVC with access to shelter or alternative care; 70% of households with chronically ill that receive free basic external support (food, school materials and basic health care).

¹³⁷ NSP2 target: 50% of HIV positive mothers or primary caregivers who report having identified a standby guardian who will take care of the child in the event that she/he is unable to do so.

¹³⁸ J Stover, L Bollinger, N Walker, R Monash. Resource needs to support orphans and vulnerable children in sub-Saharan Africa, forthcoming.

¹³⁹ Presently excludes Care and Treatment.

¹⁴⁰ The data in Table 21 were obtained from the GFATM Round 5 application.