



Spending to Save: Challenges and Opportunities for Financing Nigeria's Saving One Million Lives Initiative

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Executive Summary

The Saving One Million Lives (SOML) initiative is a bold effort to improve child and maternal health in Nigeria through investment in six highly cost-effective areas or pillars: essential medicines, immunization, malaria, maternal-child health (MCH), nutrition, and prevention of mother-to-child transmission of HIV (PMTCT)¹. If successfully implemented, the initiative could prevent one million deaths by 2015.

SOML requires substantial new resources. To help address this challenge, the SOML Program Delivery Unit (PDU) of the Federal Ministry of Health asked the Results for Development Institute (R4D) to analyze resource needs for each of the SOML pillars, assess likely financing, and develop strategies for closing funding gaps. This work, which complements other work on health financing in Nigeria, has been done in close collaboration with the PDU and with support from the Children's Investment Fund Foundation (CIFF).

Health and health financing in Nigeria

Despite improvements in some areas, health indicators in Nigeria remain poor, especially when compared with the indicators of other countries at similar levels of economic development^{2,3}. Many countries with lower GDP per capita, such as Senegal, Chad and Ghana, have markedly higher life expectancy than Nigeria⁴. Only 25% of children are fully immunized, 128 of every 1,000 die before the age of five, and 37% are stunted. Perhaps as many as 40,000 Nigerian women die of pregnancy-related causes every year. About 250,000 pregnant women are HIV positive and have a 1 in 5 chance of transmitting AIDS to their babies unless preventive measures are taken. Less than 10% of these women are screened and given prophylaxis. There are very large geographic differences in health outcomes among regions, with indicators in Northern states generally among the worst. The quality of government health services is poor, and as a result these services are little used in

many parts of the country. Many people rely on informal and poorly regulated private providers, including medicine vendors, for basic services. According to a recent study, 39% of Nigerians reported that they obtained treatment for their last episode of malaria from a medicine vendor and another 25% took medicine they had previously obtained from a shop.⁵

In the Nigerian federal system, state and local governments are responsible for financing and delivering health services at the primary and secondary levels, while the federal government supports higher-level institutions and coordinates and finances certain national programs, including immunization, HIV/AIDS, malaria, and nutrition. Funding for state and local budgets comes primarily from constitutionally mandated allocations from the Federation Account, into which oil revenues and other tax receipts are deposited. Little reliable information is available on state and local health spending, and our analysis has therefore focused primarily on opportunities for increased federal and donor funding for SOML. Better information on public spending at the lower levels of government is badly needed.

Federal government spending on health comes from three main sources. The Federal Ministry of Health (FMOH) has a proposed budget of \$1.6 billion in 2013, representing 5.7% of the total federal budget. The Subsidy Reinvestment and Empowerment Programme (SURE-P), funded by reductions in fuel subsidies, is expected to devote about 10% of its budget or \$171 million to health programs in 2014. Finally, about \$90 million from debt relief funds is budgeted for health in 2014, though not all of this goes to SOML. Overall, WHO estimates that public spending on health, across all levels of government, was about 6.7% of total public spending in 2012.

¹ All of the activities under SOML are high impact and relatively low cost, i.e., they are extremely cost-effective, with estimated ratios below \$2000 per life saved (the standard benchmark for "cost-effective" is cost per life saved of less than 15 X GDP per capita, or \$30,000 per life saved for Nigeria).

² Nigeria's National Bureau of Statistics released preliminary GDP estimates on April 6, 2014 after a rebasing exercise that significantly adjusted upwards estimates of its GDP per capita. Previously GDP per capita was estimated at \$1,555 for 2012 and the preliminary (rebased) numbers put it at \$2,689. Because of the preliminary nature of that exercise, our analysis uses the prior GDP estimate.

³ <http://www.nigerianstat.gov.ng/>, Nigeria GDP Rebasing Presentation

⁴ Gapminder.org

⁵ Oladepo et. al., 2007, Malaria treatment and policy in three regions in Nigeria: the role of Patent Medicine Vendors

SOML cost and available financing

The starting point for our analysis was the SOML costing done by the PDU in October 2012. We have updated and revised these estimates on the basis of new information and consultations with government, donor, and NGO staff. We have filled in missing data where necessary and, in some cases, incorporated additional interventions or adjusted coverage targets. For most of the pillars we have extended cost estimates through 2017. For all but one pillar we have developed three scenarios, built on optimistic, pessimistic, and medium projections of donor and government financing.

Table ES-1, below, shows projected resource requirements by year for each of the SOML pillars. The emerging financial picture is significantly different from the figures used to

launch SOML in 2012. Total financing need in 2014 is more than US\$ 1.1 billion. Malaria has the greatest requirements, followed by immunization. Total cost in 2014 corresponds to \$6.03 per capita, or nearly two-thirds of the entire FMOH budget. Over the four year period shown below, total funding needs amount to over \$4 billion, without taking into account the required financing for immunization and essential medicines in 2016 and 2017. If these are counted, total resource needs probably exceed \$5 billion.

The range of likely available financing for each pillar as a fraction of need is shown in table ES-2, below, along with the projected funding gap for the initiative as a whole, for the medium scenario. Malaria and PMTCT are relatively well funded, although substantial gaps remains for both, while planned interventions for nutrition, MCH, and essential medicines in particular remain largely unfunded, especially in later years. The funding gap is US\$1.55 billion for 2014-2017, or 37% of total needs.⁶

Table ES-1. Resource requirements by pillar (US\$ million)

Resource Needs	2014	2015	2016	2017	2014-2017
Essential Medicines	138.5	139.6	n/a	n/a	278.1
Immunization	266.5	362.1	n/a	n/a	628.6
Maternal-Child Health	119.6	154.6	170.7	191.8	636.6
Malaria	438.8	439.4	342.9	360.0	1,581.0
Nutrition	38.6	113.9	185.8	251.0	589.3
PMTCT	73.8	89.5	100.7	113.7	377.7
Total	1,075.8	1,299.0	800.0	916.5	4,091.4
Resource Requirements US\$/p.c.	\$6.03	\$7.07	N.A.	N.A.	N.A.

Table ES-2. Likely Financing as Percent of Requirements by Pillar and Total Funding Gap

Range of Likely Financing as Percent of Requirements					
Resource Needs	2014	2015	2016	2017	2014-2017
Essential Medicines	75%	54%	N.A.	N.A.	64%
Immunization	49-56%	59-67%	N.A.	N.A.	55%-62%
Maternal-Child Health	80%	62-110%	0-44%	0-39%	30%-65%
Malaria	82-100%	51-75%	57-100%	54-98%	62%-93%
Nutrition	100%	43-73%	26-45%	14-28%	29%-47%
PMTCT	100%	57-100%	53-100%	45-95%	61%-98%
Total Funding Gap (middle scenario; \$US million)	176.3	477.5	380.7	512.2	1,546.7

⁶ Projections of the gap for 2016 and 2017 do not include essential medicines or immunization, for which estimates were not developed for these years.

A central finding from this analysis is that domestic sources contribute only 24% to likely financing for SOML: external donors, including multilateral organizations (51% of likely financing), bilateral agencies (23%), and foundations (2%), account for remaining three quarters. The Global Fund, GAVI, and US government contribute 58% of the total. This is a heavy dependence on external funding for the lifeblood of SOML. The domestic contribution is low and could call into question the level of commitment by the government to the program.

Almost all funding for SOML is earmarked to a particular pillar and, in many cases, to specific interventions. As a result, there is little flexibility to move funding across pillars or activities within a pillar, as needs shift over time. Beyond a small amount of funding for the PDU's own operations, a dedicated SOML fund for filling initiative-specific funding gaps does not exist.

Scope for greater Nigerian government funding for SOML

According to our calculations, based on IMF and WHO data, spending on health by all levels of government in Nigeria is projected to be about \$32 per capita in 2014, while the projected funding gap for SOML is \$1.04 per capita in 2014 and \$2.83 per capita in 2015. Closing this gap would therefore require a 3% increase in total public health spending in 2014 and a 9% increase in 2015. If only the federal government's spending is considered, the necessary increase would be 11% in 2014 and 31% in 2015. These imply large changes in a highly constrained budget, where many priorities and claims for extra resources compete with one another. It will therefore be challenging for the government to fill the SOML funding gap.

We examined various ways in which the federal government might attempt to allocate more money to SOML. We considered the impact of increasing the fraction of government expenditure devoted to health by 0.4 percentage points per year, with a third of the new spending going to SOML. This would generate an additional \$242 million for the initiative over 2015-2017, filling 17% of the funding gap. If, on top of this, 5% of federal spending on tertiary hospitals were reallocated to SOML, the gap would be narrowed by an additional \$135 million (a total of \$377 million, or around 26% of the overall gap).

In this light, it is worrisome that the draft 2014 budget for FMOH is smaller than the 2013 budget. The draft budget for SURE-P includes an increase in health spending, but within this the amount for upgrading health facilities under the MCH pillar is projected to fall substantially. State and local health budgets are another important potential

source of funding for SOML (due to poor data, they are not included in our financing estimates), although allocations from the federation account to states and LGAs are not expected to increase rapidly.

This analysis suggests that modest increases in federal health spending, along with some reallocation toward the highly cost-effective SOML interventions, could make a substantial contribution to meeting SOML's resource needs. While it is unlikely that the gap can be closed entirely from domestic sources, especially given Nigeria's constrained fiscal situation over the next few years, such a demonstration of government commitment would send an important signal and could unlock additional donor funding.

Other options for closing the financing gap

International donors have so far been the main funders of SOML, with prospects for additional funding varying widely across the pillars. Some pillars (malaria, PMTCT, and immunization) have established and relatively stable external funding sources (the Global Fund, the US government, and GAVI), while others, particularly nutrition and to a lesser extent essential medicines, must assemble new coalitions of donors. Opportunities for new funding are probably greatest in these areas but also most uncertain. In general, despite overall steady growth in external assistance for health (with a dip in 2012), the continuing domestic fiscal pressure on aid budgets may limit prospects for continued growth in external assistance for health. In the medium term, Nigeria's rising per capita income, and its recent major upward revision ("rebasings") of its national income may further reduce its access to some sources of international funding — for example, Nigeria may, with the recent GDP rebasing exercise, cross GAVI's eligibility threshold in 2015 and start to move into the five year "graduation" period, after which GAVI funding ceases. All of these circumstances reinforce the need for Nigeria to mobilize additional domestic funding for the SOML initiative.

There could also be opportunities to leverage the private sector to reduce the SOML funding gap. The recently formed Private Sector Health Alliance, a collation of private sector actors aiming to accelerate progress towards MDG goals 4,5 and 6, could play a catalytic role. Thus far, over \$41 million USD has been mobilized by the Alliance for SOML-related activities, including the provision of essential commodities (Oral Rehydration Solutions and Zinc, Ready to Use Therapeutic Foods, etc) and support for routine immunization.

Even with renewed efforts by the Government, donors, and private actors, closing the SOML funding gap will remain challenging. To address the likely financial short-

falls, the PDU and agencies responsible for specific pillars could also consider revising coverage targets for some interventions. Many current targets are very ambitious, and progress to date suggests they will be difficult to reach even if sufficient funding becomes available.

Lower intervention coverage targets inevitably mean less health impact. But the effect of a funding shortfall can be minimized by prioritizing interventions with the greatest potential impact, and the PDU should work with its partners to analyze the implication of alternative options for allocating available funding. In principle, prioritization could occur across regions, across pillars, and across interventions within pillars. For example, FMOH could give priority to relatively neglected pillars with high cost-effectiveness, like Nutrition or MCH, or within pillars, to interventions with the highest return, e.g., within Nutrition a focus on management of acute malnutrition and expanded micronutrient supplementation. In practice, however, the scope for reallocating funding, especially across pillars, may be limited by donor earmarking and political considerations.

Beyond 2015 — sustaining the gains

The SOML initiative has been framed as an effort to rapidly improve outcomes by 2015, the target date for the MDGs, but failure to plan for the longer term would put any gains achieved this year and next at risk. Some of the costs considered in our analysis are scale-up or one-time expenditures, but the great majority, encompassing commodity as well as personnel costs, are recurrent. Moreover, although progress in some areas could lead to savings — polio eradication is the most striking example — in most cases high coverage of interventions will have to be sustained indefinitely. Maintaining the gains from SOML after 2015 will require continuing expenditures on par with those mapped for the next few years. Therefore a high priority is to work toward a sustainable financing architecture for the activities covered in the initiative, even if the SOML rubric

itself is allowed to expire at the end of 2015. Elements of such a longer-term architecture could include: extension of SURE-P and its health programs, building funding for some currently donor-financing elements of SOML into the FMOH budget, persuading states and LGAs to assume responsibility for some personnel costs, and working with donors and other recipient countries to establish stable funding structures for nutrition and aspects of maternal and reproductive health.

While our analysis has focused on financing for specific interventions grouped under a set of vertical pillars, the biggest obstacle to the success of the SOML is the weakness of Nigeria's health system. The drive to meet targets in particular areas must not distract the PDU, the FMOH, and their partners from the urgency of strengthening health service delivery. The SURE-P-funded project to upgrade primary healthcare facilities and employ more nurses and community workers is a promising start, but its reach is limited and it must be accompanied by similar state-led efforts, improvements in cross-cutting elements of the system such as supply chains and information systems, and greater engagement with and stronger regulation of the private sector.

The Saving One Million Lives initiative could lead to large health improvements in the short term, and could also catalyze larger gains by drawing attention to important, under-funded areas of health, such as nutrition and essential medicines. Our review suggests that the funding gap for SOML is considerable through 2015 and beyond. However, we conclude that a significant portion of that funding gap could be closed through coordinated action by the Federal Ministry of Health (greater targeting of spending to highly cost-effective activities), the Federal Ministry of Finance (modest increases in fiscal effort, fulfillment of commitments to nutrition, family planning and AIDS), and donors (through more flexible funding mechanisms). If taken, these and other feasible options explored in our analysis will help maximize lives saved under the current program and establish a sustainable funding architecture for the future.

List of Acronyms

ACT	Artemisinin-based Combination Therapy for malaria	IHME	Institute for Health Metrics and Evaluation
AMFm	Affordable Medicines Facility for malaria	IMF	The International Monetary Fund
ANC	Antenatal Care	IPV	Inactivated Polio Vaccine
ART	Antiretroviral Therapy	ISS	Immunization Support Services
ARV	Antiretroviral Drugs	IYCF	Infant and Young Child Feeding
AusAID	Australian Agency for International Development	JICA	Japan International Cooperation Agency
BCG	Bacillus Calmette–Guérin Vaccine	JHPIEGO	Johns Hopkins Program for International Education in Gynecology and Obstetrics
CGSS	Conditional Grants and Social Safety Nets Program	KfW	KfW Development Bank, Germany
CHAI	Clinton Health Access Initiative	LGA	Local Government Areas
CIDA	Canadian International Development Agency	LIST	Lives Saved Tool, Johns Hopkins University
CIFF	Children’s Investment Fund Foundation	M&E	Monitoring & Evaluation
CMAM	Community Management of Acute Malnutrition	MAM	Moderate Acute Malnutrition
cMYP	comprehensive Multi-Year Plan for Immunization	MCH	Maternal and Child Health
DfID	Department for International Development, UK	MDGs	Millennium Development Goals
DTP3	Diphtheria–Tetanus–Pertussis Vaccine	MNCH	Maternal Newborn and Child Health
ECA	Excess Crude Account	MoF	Federal Ministry of Finance in Nigeria
ENR	Enhancing Nigeria’s Response to HIV and AIDS, DfID	MSS	Midwives Service Scheme
EPI	Expanded Program on Immunization	NACA	National Agency for the Control of AIDS
EU	European Union	NAFDAC	National Agency for Food and Drug Administration and Control
FA	Federation Account	NASA	National AIDS Spending Assessment
FGoN/GoN	Federal Government of Nigeria	NCDs	Non-communicable Diseases
FMoH/MoH	Federal Ministry of Health in Nigeria	NDHS/DHS	Nigeria Demographic and Health Survey
GAVI	The GAVI Alliance (formerly the “Global Alliance for Vaccines and Immunisation”)	NHA	National Health Accounts
GDP	Gross Domestic Product	NHIS	National Health Insurance Scheme
GF/GFATM	The Global Fund to Fight AIDS, Tuberculosis & Malaria	NMP	The National Malaria Programme
GNI	Gross National Income	NORAD	Norwegian Agency for Development Cooperation
GPEI	Global Polio Eradication Initiative	NPHCDA	National Primary Health Care Development Agency
HPV	Human Papillomavirus Vaccine	NRISP	National Routine Immunization Strategic Plan
HRH	Human Resources for Health	NSPAN	National Strategic Plan of Action
HSS	Health System Strengthening	OECD	Organization for Economic Co-operation and Development
		OPV	Oral Polio Vaccine
		ORS	Oral Rehydration Solution

PATHS2	Partnership for Transforming Health Systems Phase II	RUTF	Ready-to-Use Therapeutic Food
PCR	President's Comprehensive Response Plan for HIV/AIDS, 2013	SAM	Severe Acute Malnutrition
PDU	Program Delivery Unit	SOML	Saving One Million Lives Initiative
PEI	Polio Eradication Initiative	SPHCMB	State Primary Health Care Management Board
PEPFAR	President's Emergency Plan for AIDS Relief	SuNMaP	Support to Nigeria Malaria Programme, DfID
PERs	Public Expenditure Reviews	SURE-P	Subsidy Reinvestment and Empowerment Program
PHC	Primary Health Care	UN	United Nations
PHCs	Primary Health Centers	UNCoLSC	UN Commission on Life-Saving Commodities for Women and Children
PMI	President's Malaria Initiative	UNFPA	United Nations Population Fund
PMTCT	Prevention of Mother-to-Child Transmission of HIV	UNGA	United Nations General Assembly
PPMVs	Patent and Proprietary Medicine Vendors	UNICEF	The United Nations Children's Fund
PRRINN-MNCH	Partnership for Reviving Routine Immunization in Northern Nigeria; Maternal Newborn and Child Health Initiative (DfID)	USAID	United States Agency for International Development
R4D	Results for Development Institute	WASH	The Water, Sanitation, and Hygiene Programme
RDT	Malaria Rapid Diagnostic Tests	WB	The World Bank
RNE	Resource Needs Estimate	WHO	The World Health Organization
		WINNN	Working to Improve Nutrition in Northern Nigeria, DfID

Project Background, Rationale, and Purpose

The Saving One Million Lives (SOML) initiative is an ambitious attempt to rapidly improve health outcomes in Nigeria through investments in a set of cost-effective interventions in six areas or pillars: essential medicines, immunization, malaria, maternal-child health (MCH), nutrition, and prevention of mother-to-child transmission of HIV (PMTCT). As Table 1 illustrates, key interventions within each pillar are highly cost-effective, when measured against key WHO benchmarks.⁷

These investments in specific interventions are meant to be complemented by stronger information systems, improvements in supply chains, and oversight from a program delivery unit (PDU), with the goal of improved service delivery and greater health impact. The overall aim of the initiative, which was launched in late 2012 by President Goodluck Jonathan, is to avert an additional one million maternal and child deaths by 2015.

The success of SOML depends on mobilizing substantial new resources. Moreover, while SOML as an initiative is due to end in 2015, investments in the six areas are expected to continue beyond 2015. Policymakers, implementers and donors therefore need accurate estimates of the costs of the program (updated to reflect the progress in scale-up over 2013) and a broad understanding of potential sources

of financing. When SOML was launched, Nigerian leaders recognized that the estimates of resources needed were rough and based on limited data and assumptions, and that only a fraction of the required funding had been secured.

To address these limitations, the PDU asked the Results for Development Institute (R4D) to work with it to further analyze the resource needs estimates and financing plans for the SOML pillars, and use that analysis to identify the largest challenges to SOML's aspirations and inform strategies for closing fiscal gaps. Co-developed with the PDU, those strategies are intended to be shared with domestic and external sources of funding and help ensure that SOML is adequately funded through 2015, that limited resources are used to maximize averted mother and child deaths, and that pillar investments generate lasting improvements for maternal and child health in Nigeria.

The key questions that this work is meant to address are thus:

- How much will it cost to achieve the SOML targets in the six pillar areas?
- How much funding has been secured to pay for pillar activities?
- How large are the remaining gaps, and what might be done to fill these gaps partially if not fully?

Table 1: Cost-effectiveness of selected health interventions

Pillar/Selected Interventions	Cost per DALY (USD)	Source	Geography
Nutrition			
Vitamin A Supplementation	\$23- \$50	Chow et al 2010	India
CMAM	\$42	Wilford et al 2010	Malawi
Malaria			
Bet net distribution	\$4- \$31	Becker-Dreps et al 2009	Democratic Republic of Congo
Immunization			
Diphtheria, Pertussis, Tetanus, Polio and Measles	\$7	Brenzel et al 2006	SSA
PMTCT			
Options A, B and B+	\$7-\$348	Johri 2011	Global
Essential Medicines			
Misoprostol	\$6-\$170	Sutherland et al 2010	India

⁷An intervention is considered very cost effective when the incremental cost effectiveness per DALY falls below GDP per capita.

This work has been completed jointly with the PDU SOML team. R4D and the PDU collaborated in obtaining more recent data, as well as in developing the methodology and overall approach for this analysis. As a result of this collaboration, the PDU will be better equipped to periodically update the analyses in this report.

It is also expected that this analysis will complement ongoing efforts by others to produce more accurate information about budgets, expenditures, and sources of finance for the health sector in Nigeria. These other actors include the World Bank, which is working with the Federal Ministry of Health (FMOH) to estimate the costs of delivering the SOML nutrition interventions; DfID, which recently conducted health sector public expenditure reviews in several states; and the Bill and Melinda Gates Foundation, which is supporting the PDU to measure SOML results more accurately.

Support for this study has come from the Children's Investment Fund Foundation (CIFF). CIFF has been working closely with FMOH over the past two years to support the SOML initiative in three areas: providing financing for

Community Management of Acute Malnutrition (CMAM), a centerpiece of the SOML nutrition strategy; supporting improvements in performance management of MNCH; and more recently, assisting the PDU to model mothers' and children's lives saved using the Lives Saved Tool (LiST), in partnership with Johns Hopkins University.

The report is organized into five chapters. The first chapter reviews the status of health and the health system in Nigeria, outlines progress to date and constraints to achieving substantial health gains, and provides a broad overview of the fundamentals of health financing in the country. In Chapter II, we explain the approach we used to generate our cost and financing estimates. In the subsequent chapter, we present pillar-by-pillar analyses, each of which explores several different financing scenarios. The fourth chapter merges the pillar projections to provide estimates of the overall funding gap for SOML and explores the range of "fiscal space" for the initiative by illustrating the potential impact of several approaches to increasing domestic financing. Lastly, we draw out the core findings and implications of our analysis and offer recommendations for maximizing and sustaining the impact of SOML.

Chapter I: Background on Health and Public Financing in Nigeria

Health Indicators

While Nigeria has made appreciable progress in some key health indicators over the past decade, outcomes generally remain poor and achievement of the MDGs by 2015 seems increasingly unlikely.

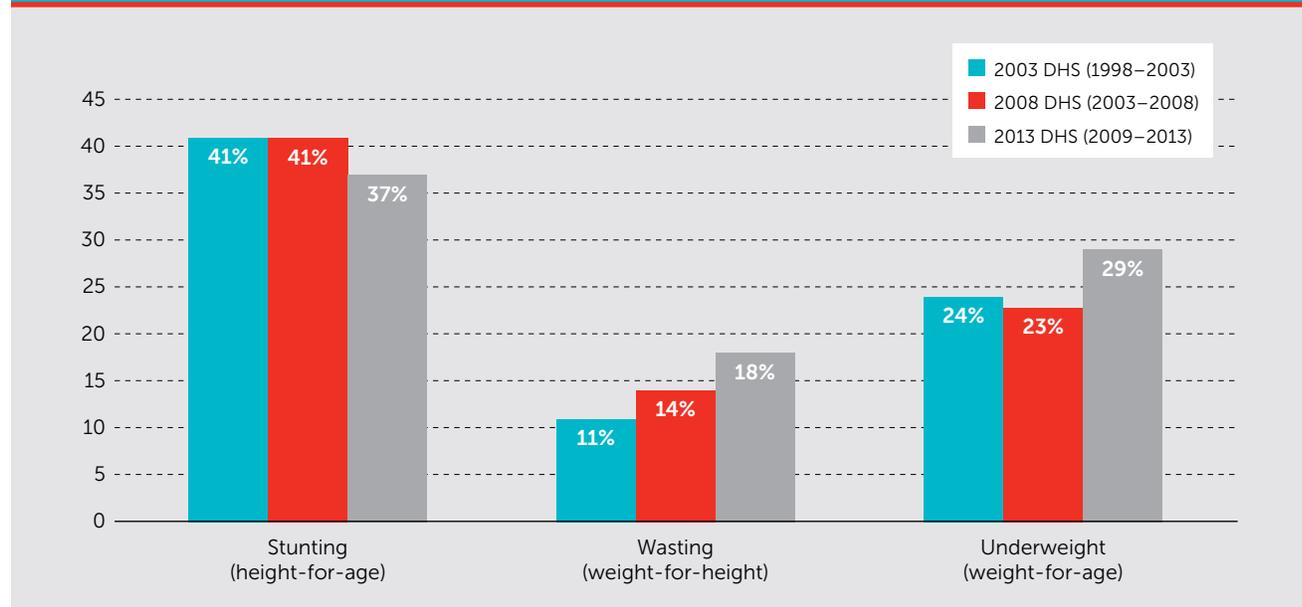
A review of those indicators targeted by SOML interventions reveals that urgent progress is needed across all six pillars. For example, the most recent DHS revealed that, as of 2013, 37% of children under five are stunted and 18% are wasted, suggesting that a concerted effort is needed to improve the nutritional status of children in Nigeria. The wasting number is particularly alarming, as this represents an increase of seven percentage points over the 2003 DHS estimate, and is significantly higher than the average wasting rate for least developed countries (10%)⁸

With respect to immunization, only 25% of children aged 12-23 are fully vaccinated⁹ and 21% of children received no vaccinations at all. The DHS estimated that only 38% of children had received at least three doses of the combination DTP vaccine, far below the Decade of Vaccines target of 90% coverage.¹⁰

Nigeria bears the second largest burden of child mortality in the world (850,000 under-five deaths per year)¹¹ There has been some progress in under-five mortality, which declined from 201 to 128 per 1,000 between 2003 and 2013. This rate is still very high, and it is clear that Nigeria will not approach the MDG target of 64 by 2015.¹² Nigeria also bears a high burden of maternal mortality, with 40,000 maternal deaths per year.¹³

While subnational statistics are quite poor, it is worth noting that the distribution of the health outcomes and utilization of health services within the country is highly inequitable. For example, antenatal care coverage in 2013 was 86%

Figure 1: Trends in nutritional status of children under-5, 2003-2013



⁸ State of the World's Children 2012

⁹ A "fully vaccinated" child has received BCG, measles and three doses each of polio and the DTP combination vaccine.

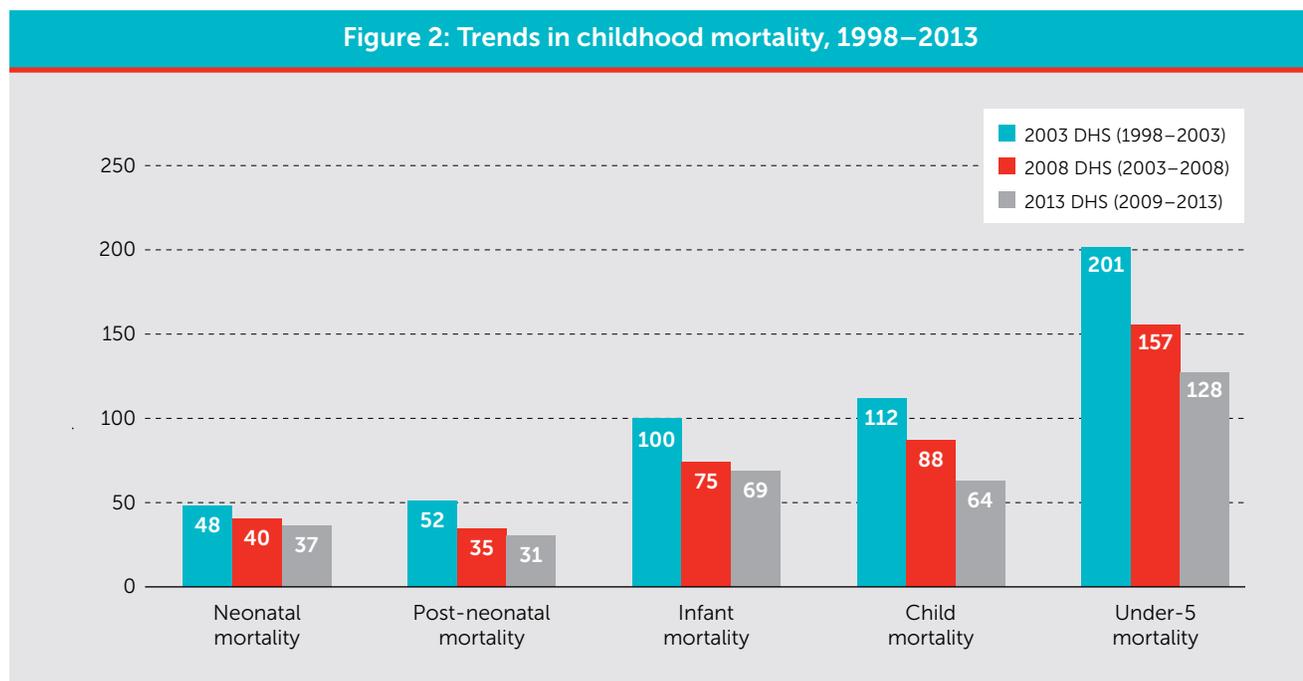
¹⁰ 2013 DHS

¹¹ IHME data

¹² Ibid

¹³ Author calculations based on World Bank and UN data

Figure 2: Trends in childhood mortality, 1998–2013



in urban areas, yet only 47% in rural areas. Furthermore, a much higher percentage of births in the South West (83%) and South East (82%) regions were attended by skilled birth attendants than births in the North East (20%) and North West (12%). As a result, maternal health and other outcomes are much better in the southern part of the country.¹⁴

The numerous bottlenecks to improved outcomes in Nigeria are referenced throughout the report. For example, only 29% of children in Nigeria sleep under insecticide treated bednets, only 45% of pregnant women make the recommended four antenatal care visits, and skilled attendants are present at only 39% of births.¹⁵ These are among the lowest rates in the world. Most importantly, the quality of health services is very poor in many parts of the country, as a result of weak coordination among the three levels of government, insufficient financing, inadequate monitoring/poor data, poorly trained health personnel, persistent stock-outs of key commodities, and a lack of accountability (particularly in linking allocations to actual spending).¹⁶ More detail on the relationship between the performance of the health system and achievement of SOML outcomes can be found in Chapter V.

In sum, while Nigeria has shown some progress in health indicators over the past decade, dramatic gains — of the type envisioned for SOML — will require major improvements in health system performance.

¹⁴ 2013 DHS

¹⁵ Countdown to 2015

¹⁶ Nigeria Health System Assessment, 2008

¹⁷ OPM, Political Economy and Institutional Assessment for RBF in Health, 2012

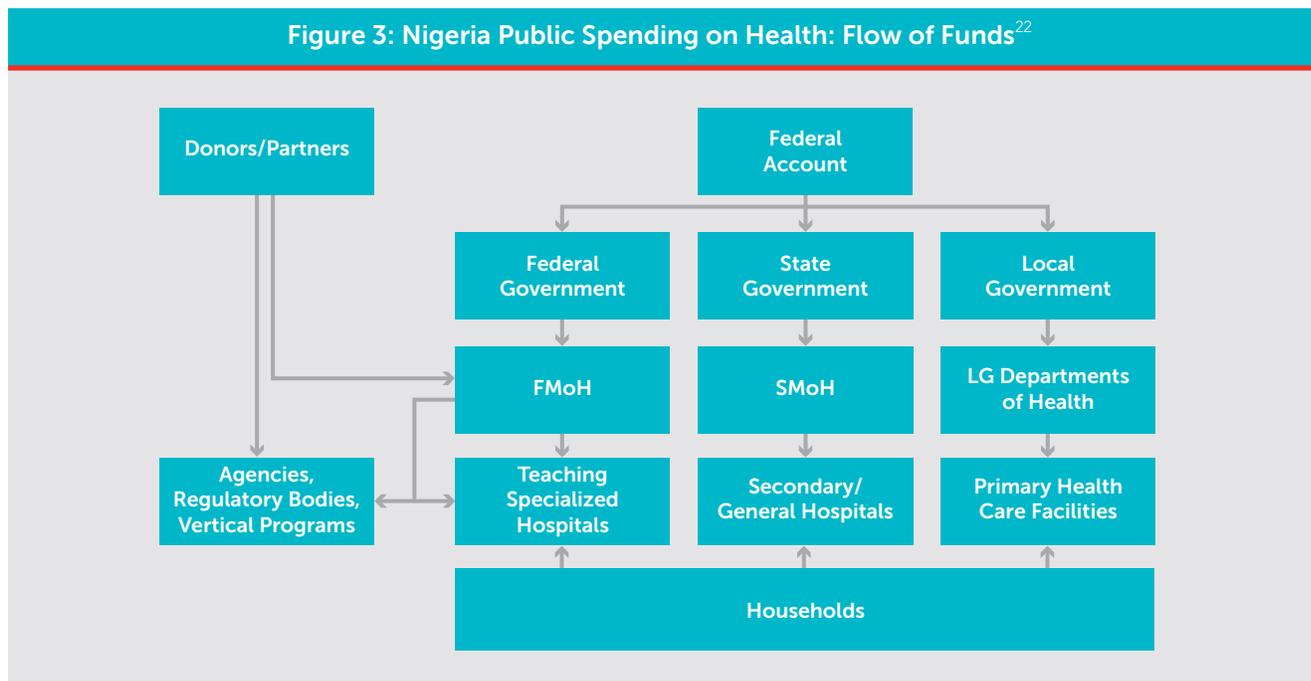
Public Financing in Nigeria

The public financing framework in Nigeria is complicated, reflecting the distinct roles of the three tiers of government.

Most federal revenue is housed in the Federation Account, which is funded by oil revenue, customs and excise taxes, and company income taxes. The Ministry of Finance, through the Federation Account Allocation Committee, then disburses funds monthly according to a fixed formula to local government areas (LGAs) (20.60%), state governments (26.72%), and federal government (52.68%), as depicted in Figure 3. This formula cannot be modified without action by the National Assembly. Not shown in the figure are other important sources of funds outside of the Federation Account that go to the federal government, including the Subsidy Reinvestment and Empowerment Program (SURE-P), VAT revenue that flows separately to federal, state, and local governments, and independent revenue from the sale of assets, and surplus and dividends from State Owned Enterprises that flows to the federal budget.¹⁷

States and LGAs also raise their own revenue to complement funds from the Federation Account, although the capacity for this varies greatly from state to state. In general, internally generated revenue makes up no more than 10% of state revenue, although Lagos and Kano are important exceptions.

Figure 3: Nigeria Public Spending on Health: Flow of Funds²²



Although there is some overlap, federal, state, and local governments each have distinct responsibilities in Nigeria's health system. The Federal Ministry of Health (FMOH) supports specialized hospitals, as well as 22 federal medical centers throughout Nigeria. It also supports various other institutes, laboratories, professional councils and registration boards. The National Primary Health Care Development Agency (NPHCDA)¹⁸ is under the Federal Ministry of Health, as are the National Health Insurance Scheme, health research institutes, and the National Agency for Food and Drug Administration and Control. The largest share of the FMOH's proposed budget is allocated to specialized hospitals (54%) and NPHCDA receives about 4% of the budget.¹⁹ The federal government also coordinates national programs such as immunization, HIV/AIDS, malaria, TB and leprosy control, nutrition, and NCDs. While the Ministry of Health is the main actor in health at the Federal level, defense, prisons, and education also finance and provide health services and ideally, these funds would be included in comprehensive National Health Accounts for Nigeria.²⁰

State governments are largely responsible for secondary care, although in some cases they also support specialized hospitals.²¹ States manage their finances independently

of the federal government and use their own accounting standards. LGAs are responsible for primary health care in Nigeria, with the support of state governments; they also possess authority over their own budgets. There is little information available on public spending on health at the state and local level, as there is no standardized reporting on budgets and expenditures. DfID and the World Bank have attempted to perform public expenditure reviews (PERs) in a handful of states, but have found the exercise challenging. The ideal basis for improved budgeting and expenditure reporting would be a unified chart of accounts that would be used by all levels of government in Nigeria.

Given the lack of information on state and local budgets, the clearest picture of public health spending in Nigeria can be drawn from the Federal and SURE-P budgets. But it is important to remember that these federal *allocations* do not necessarily result in a similar level of federal *expenditures*. Budget underspending is particularly an issue with the capital budget (much less so for recurrent, which has a high share of personnel costs). It is also important to remember the role of donor funding, (which represents 79% of total SOML funding for 2014-17), most of which does not flow through the federal budget.

⁸ An analysis of the 2014 NPHCDA budget reveals that 85% of the funds are allocated to twelve capital projects, for which the largest is polio eradication, at \$22.8 million.

¹⁹ 2014 Federal Budget Proposal

²⁰ In order to simplify the analysis, these allocations are not presented in Table 1.

²¹ World Bank, Nigeria Economic Report, May 2013.

²² PATHS2, Nigeria Health Expenditure Review 2009-11, October 2012

There have been two ad hoc estimates of Nigeria's National Health Accounts that attempt to pull together a consolidated picture on public spending on health. A third attempt is under way. Using what can be gleaned from the existing National Health Accounts, WHO estimates that government spending on health was about 6.7% of total government spending in 2012. This should be seen as a rough estimate, given the low quality and timeliness of data available in Nigeria.

The FMOH is the main channel for federal health spending. The proposed allocation for FMOH in 2014 is \$1.6 billion, which represents a \$100 million decrease, in nominal terms, from the 2013 budget. The FMOH allocation amounts to about 5.7% of the regular federal budget. In addition to FMOH's allocation from the regular federal budget, two other sources of federal financing are important:

SURE-P. The Subsidy Reinvestment and Empowerment Programme (SURE-P) was established in January 2012 with the objective of financing high-priority social safety net and infrastructure programs with the savings from reductions in fuel subsidies. The proposed 2014 SURE-P budget is based on a projected inflow of \$1.13 billion, which, com-

pared with the \$0.55 billion unspent balance from 2013, gives a total proposed budget of \$1.68 billion for 2014. The proposed budget devotes about 10.2% of this to health programs, including MCH (\$75.3 million), NCDs (\$2.8 million), counterpart funding for HIV/AIDS (\$50 million), and polio eradication (\$46.6 million). While the MCH allocation was larger in 2013 (\$105.7 million), the proposed 2014 SURE-P budget does include additional items important for SOML, particularly the contributions to polio eradication and HIV/AIDS (Table 2).

Debt relief funds. When debt relief was negotiated for Nigeria through the Paris Club in 2005, it was agreed that relief funds would be channeled to the MDGs. Coordinated by an office in the presidency, (Office of the Senior Special Assistant to the President – MDGs), the MDG funding is ring-fenced for Health, Education and Water/Sanitation/Hygiene, with approximately 12% (\$90 million) of the annual funds going towards health in 2014.

FMOH regular budget funds and the health portions of SURE-P total about \$1.8 billion in 2014 (\$10.2 per capita), assuming that the proposed budget is approved by the legislature. Applying the WHO estimate that across all three

Table 2: Overview of Federal Level Budgets for Health and Total^a Public Spending on Health, 2013-14 1, 2 (US\$ million)

	Approved	Proposed
	2013	2014
(1) Regular Federal Budget	\$31,170.1	\$29,018.5
Of which: FMOH	\$1,742.6	\$1,642.1
% of total Federal budget	5.6%	5.7%
NPHCDA (under FMOH)	\$87.9	\$73.6
% of FMOH	5%	4%
(2) SURE-P (separate from regular Federal Budget)	\$1,709.5	\$1,677.3
(a) MCH	\$105.7	\$75.3
(b) NCDs, counterpart funding for HIV/AIDS, polio eradication	—	\$95.4
SURE-P allocation to health as % of SURE-P	6%	10%
FMOH plus SURE-P health funds	\$1,848.3	\$1,812.9
FMOH plus SURE-P health budgeted funds per capita	\$10.6 p.c.	\$10.2 p.c.
NHA Estimate of Health Spending at all levels		
Total public spending on health per capita (all levels of government) ^b	[\$32 p.c.]	

^a Exchange rate of US\$1 - 160 Naira assumed for 2013 and 2014.

^b General government expenditure estimates drawn from IMF October 2013 World Economic Forecast. Assumed exchange rate of 160 to convert to US\$. Assumed that public spending on health totaled 6.7% of general government expenditure per WHO Nigeria NHA estimates for 2012. Population estimates drawn from UN Population Prospects.

levels of government, public spending on health is about 6.7 % of government spending, total public outlays for health in 2014 would amount to \$5.95 billion — approximately \$34 per capita.²³ This estimate must be considered very rough, given the quality of the data. Table 2 summarizes the key data.

As explained in further detail in Chapter IV, resource requirements for SOML in 2014, \$1.08 billion or \$6.37 per capita, correspond to about two-thirds of all federal public spending on health and close to 20% of total public spending on health across all three levels of government in 2014 (if the WHO's estimate for 2011 holds). These calculations give an indication of the magnitude of SOML resource requirements relative to current public spending, and suggest how much more federal revenue would need to be mobilized for health in order to have Nigeria cover a large share of SOML spending.

It is critical to highlight the importance of fluctuations in oil revenues, upon which all levels of the Nigerian government depend heavily, to any projections of government

spending. Since 2004, Nigeria has managed an Excess Crude Account (ECA) of surplus oil revenues. The ECA is intended to help insulate government spending from swings in oil prices. Oil revenue each year is projected based on a benchmark price and total production. When prices and/or production are higher, the excess revenue can be held in the ECA. If the price or production is lower than expected during the year, funds are drawn from the Account to meet the planned monthly budgetary distributions. However, in late 2013, the reserve in the ECA had fallen to such a low level that when oil revenue shortfalls occurred, the government temporarily suspended all transfers from the Account to make up for those shortfalls. Should oil prices rise higher than projected in the coming years (and production volumes also increase), the government would most likely need to build up the ECA again before distributing additional resources to federal, state, and LGA units. The Nigerian government is working to broaden its tax base so that it is not so heavily dependent on oil. In the interim, the budget forecast is tight; the proposed 2014 government budget (\$29.02 billion) is about 7% lower than the 2013 total budget (\$31.17 billion).

²³ We applied the 7.57% to IMF projections of 2014 total government expenditures.

Chapter II: Methodology

Our fiscal space analysis involved the following five steps:

(1) Revision of original resource needs estimates

Using as a starting point the SOML resource needs estimates developed by the PDU, with assistance from the Clinton Health Access Initiative (CHAI) in October 2012, we created new cost estimates for the pillars, incorporating information that was not available earlier.²⁴ In partnership with the PDU, we gathered as many relevant documents as possible and assessed their quality; consulted with government, donor, and NGO staff; and corrected errors and filled gaps where necessary. In some cases we incorporated additional interventions in the costing or revised intervention coverage targets where it was felt that the original targets were not realistic.

The extent of revisions was considerable across the pillars. For example, the October 2012 nutrition costing focused exclusively on Community Management of Acute Malnutrition (CMAM), whereas the current nutrition resource needs estimate considers a much wider set of interventions, as identified in the National Strategic Plan of Action (NSPAN). The scope of the essential medicines pillar has also been increased substantially, as it now includes medicines for reproductive/maternal and neonatal as well as child health, though we have relied primarily on the costing done for the UN Commission on Life-Saving Commodities for Women and Children completed in August 2013. Similarly, we chose to use a different costing model — one generated by CHAI — as a basis for recalculating the resource needs for PMTCT.

Although SOML focuses on the period 2012–2015, we have, where possible, extended cost projections to 2017. Because 2015 is only one year away, a longer time horizon will make the exercise more useful to both government and donors.

(2) Revision of financing estimates

In parallel with revisions to the pillar costing, we updated financing projections for each pillar. The starting point for these projections was again the estimates contained in the original SOML costing model, revised to incorporate considerable new information on available and likely financing.

As in the original estimates, these projections included both domestic and donor financing. Revised financing estimates were derived from both direct communication with the government and key donors, and a review of relevant financing plans.

(3) Development of alternative projections

We developed three scenarios for each pillar. These scenarios include both cost and financing projections and are meant to demonstrate the effects of shifts in resource needs or available financing. The low, or pessimistic, projections focus primarily on secure and very likely funding, while the medium scenario captures probable funding, and the optimistic scenario considers funding that is more ambitious but still possible. These projections do not consider new and untested sources of financing (for example, special domestic taxes or levies such as cell phone or financial transaction taxes; or entirely new funds from public sector or philanthropic donors who have not hitherto been active in maternal and child health in Nigeria), potential cost savings, or prioritization of a subset of interventions. These options are explored in a qualitative way in Chapter V of the report.

(4) Aggregation and estimation of the overall funding gap

The revised cost and financing projections were then aggregated to arrive at a range of scenarios for the overall SOML funding gap.

(5) Analysis of scope for increasing domestic financing for SOML

With the new cost and financing projections in hand, we used additional scenarios to explore the potential impact of various approaches to allocating more government funding to SOML.

In the last chapter of the report, we discuss our main findings and suggest a range of additional options for closing the financing gap and maximizing the impact of the SOML investment.

²⁴ All analyses were conducted in US\$, using a 160 Naira to 1 US\$ exchange rate

Chapter III: Pillar Analyses

Essential Medicines

Introduction

The essential medicines pillar of SOML is an outgrowth of the UN Commission on Life-Saving Commodities for Women and Children (UNCoLSC). The Commission focuses on 13 overlooked, but essential commodities across three areas — maternal and reproductive health, neonatal health, and child health — and recommends a variety of both demand- and supply-side strategies for increasing access and appropriate use to these commodities. Increased access to these commodities is projected to save the lives of at least 16 million women and children by 2015.

Existing SOML documents drawing on the Essential Medicines Scale-up Plan focused only on the child health component as it relates to the UNCoLSC and on three highlighted child health medicines: oral rehydration solution (ORS) and zinc for diarrhea, and amoxicillin for pneumonia. The 2012 SOML costing considered resource needs and financing for these commodities. In August 2013, however, Nigeria submitted a detailed plan for implementing the UNCoLSC's recommendations at the national level across all three areas. While it is still unclear whether SOML will expand its focus to include the neonatal and maternal/reproductive components of the UNCoLSC, they have been included in the revised cost and financing analysis presented here. This is the most important change in our revised projections.

The interventions covered by the expanded essential medicines pillar include a mix of existing but often poorly implemented activities, particularly in reproductive health and maternal health, and new activities. For instance, the approach to expanding access to ORS and zinc, the core of the child health component of the pillar, emphasizes creating a viable market in the informal private sector for these commodities and represents a new approach for Nigeria. As a result, this and a number of other interventions in the pillar do not have established sources of financing. Moreover, it is particularly difficult to estimate either the costs or the plausibility of coverage targets in areas where there is so little experience.

The analysis presented here relies heavily, for both cost and funding estimates, on the August UNCoLSC country implementation plan — we have not been able to vet these estimates in detail. In addition to adding the reproductive/maternal health and child health pillars to the original SOML pillar costing, we have made some small modifications to the UNCoLSC costing and have updated the financing projections, especially in the reproductive/maternal health area²⁵. These estimates are likely to continue to evolve over the next few months as the push to accelerate progress towards the health-related MDGs gathers momentum and more resources are mobilized to address these areas.

Resource needs

The estimates of costs across the three components are taken from the UNCoLSC plan. The only change we have made is to modify the distribution of projected costs across the covered years (2013-15). In the case of child and neonatal health, for which the plan provided a breakdown for the three years, we moved one-half of the projected 2013 costs to the later years to reflect the fact that only some of the planned activities had gotten fully underway in 2013. In the case of reproductive and maternal health, for which no breakdown by year was provided in the UNCoLSC plan, we divided costs across the three years in a similar way: 1/6 in 2013, with the remainder split equally between 2014 and 2015.

We have not attempted to extend the projections beyond 2015.

The activities included in the essential medicines pillar are estimated to cost \$335 million over the three years 2013-15 (see Table 3). We have weighted these costs toward 2014 and 2015 to reflect the fact that scale-up of some activities is just getting underway. Reproductive and maternal health is the most expensive of the three areas, followed by child health.

²⁵ For this update, we are very grateful to CHAI for generously briefing us on recent developments and answering questions on likely donor contributions.

Table 3: Essential medicines resources needs by component (US\$ million)

Component	2013	2014	2015	2014-15
<i>Child health (original SOML)</i>	<i>39</i>	<i>38</i>	<i>47</i>	<i>85</i>
Child health (revised)	20	52	50	102
Neonatal	9	16	18	34
Reproductive and maternal health	28	71	71	142
Total revised costs	57	138	140	278

Table 3 also compares the revised estimates of the cost of the child health component with the estimates in the original SOML costing (in italics). The three-year total is very similar; the main difference is that we have pushed some 2013 costs to 2014 and 2015. As stated previously, the other two components were not included in the original SOML costing.

Although this pillar is defined by sets of commodities, it is worth noting that according to the detailed breakdown provided by the UNCoLSC plan, training, demand generation, and other implementation activities account for the majority of projected costs, while procurement of the actual commodities accounts for only 46%, with the bulk of that being for reproductive and maternal health. In fact, the plan envisions that some commodities, in particular ORS and zinc, will be affordable to patients and caretakers in the commercial sector once markets have been primed appropriately, so that long-term subsidy will not be needed. Other commodities — and all commodities provided for free through the public sector — will require sustainable funding for procurement.

The costing approach used here, which is significantly different from the commodity-focused approach used for the SOML malaria pillar, illustrates the difficulty of applying a consistent approach across the pillars.

A few caveats must be considered. Since some of the activities included in this pillar are new, and the ability both to deliver the commodities and to raise demand for them are unclear, these cost estimates should be considered particularly uncertain. Even if sufficient funding becomes available, Nigeria's health system will be very hard-pressed to rapidly improve the quality of maternal and neonatal health services in particular. In choosing to assign the bulk of projected costs to 2014 and 2015, we acknowledge these implementation challenges. If scale-up continues to lag, however, the total cost through 2015 will likely be less than forecast, as some planned activities will be pushed to after 2015 and commodity volumes will not reach projected levels.

Table 4: Available and likely financing by component (US\$ million)

Component	2013	2014	2015	2014-15
Child health	15	21	15	36
Reproductive, maternal, and neonatal health	44	82	60	142
FGoN: MDG	1	5	0	5
FGoN: SURE-P	1	15	8	23
DfID	5	20	35	55
CIDA	6	6	6	12
USAID	17	20	3	23
UNFPA	6	8	8	16
JPIEGO, PATHFINDER, other NGOs	8	4	0	4
UNCoLSC catalytic fund	0	4	0	4
Financing total	59	103	75	178

Table 5: Projected funding gap by component (US\$ million)

Component	2013	2014	2015	2014-15
Child health	5	31	35	71
Reproductive and maternal health	-7	5	29	27
Total	-2	35	64	99

Financing

The starting point for the estimates of available and likely financing is again the UNCoLSC plan. (Likely financing for essential medicines was not estimated in the original SOML spreadsheet.) We have updated the reproductive and maternal health component with information provided by CHAI and, in some cases, obtained from donor documents. This information has helped in particular to decide whether contributions received in 2013 are likely to continue in 2014 and 2015, although these judgments remain speculative. Details about the assumptions for each donor can be found in the notes to the spreadsheet.

For child health, about \$45 million has apparently been committed by a broad range of donors for the planned activities — we have spread these contributions across the three years. Since most of the funding for neonatal health comes from programs that also address maternal health, we have estimated funding for the two areas together. This estimate is considerably higher than the UNCoLSC plan, primarily because of the inclusion of large DFID and USAID projects. Table 4 presents these estimates, with the reproductive, maternal, and neonatal health component broken down by donor. Table 4 shows the projected funding gap by component.

Many of the projects included in these estimates cover a quite broad range of maternal and child health activities, including some that properly belong in other SOML pillars. It would be very challenging to disentangle these overlaps, and we believe that the overlap is probably small.

The projected available funding is about two thirds of estimated costs across the three years — a gap of \$95 million remains to be filled. The gap is projected to be much larger in 2014 and 2015 than in 2013, but this primarily reflects how we have distributed costs across the three years..

The main domestic contribution included in these projections is a commitment of \$8.35 million annually for reproductive health commodities, made at the London family planning summit, in addition to the \$3 million already committed for the procurement of FP commodities. As with other pillars, however, all levels of government

contribute to child and maternal health through routine financing of the various levels of the health system. In a sense, the activities described in the UNCoLSC plan are intended to strengthen this system and are complementary to existing domestic financing.

Although the funding gap is large, we note that there is a greater opportunity for new donors to contribute to this pillar than to the pillars with well-established, dominant funders, such as malaria and immunization. Moreover, the projected gap may not materialize if implementation lags. Unlike the most important malaria commodity, bednets, access to which depends largely on the availability of funding for purchase, access to many important commodities included in the essential medicines pillar depends on functioning health services. This poses a difficult challenge, but also presents an opportunity for broad impact, in that investments of the kind required to improve the quality of maternal and neonatal healthcare would strengthen the delivery of other essential health services.

These funding estimates, like the cost estimates, should be considered more uncertain than estimates for other pillars, as some of the activities are new, patterns of donor support are not yet established, and many donor contributions are one-time or short-term.

Key Takeaways — Essential Medicines

- Unlike the original SOML costing and financial analysis, which focuses only on the child health prong of the UNCoLSC strategy, we have projected costs and financing for maternal/reproductive and neonatal as well as child health components of the plan.
- Access to many important commodities included in the essential medicines pillar depends on functioning health services.
- The estimated resource needs estimate for 2014–15 is \$278 million with \$178 million of projected funding over this same time period, pointing to a funding gap of \$99 million.
- Considerably more financing is in place for reproductive, maternal and neonatal health than for the child health component of essential medicines.

Immunization

Introduction

The world has approximately 22.6 million “under-immunized” children, defined as those who do not receive the third dose of a vaccine containing Diphtheria-Tetanus-Pertussis (DTP3)²⁶. By this measure, Nigeria ranks second in the world in the total numbers of under-immunized children (3.8 million), after India’s 6.9 million. DTP3 coverage is often used as a proxy for the overall performance of the immunization system. Only 38% of children received DTP3 vaccine per Nigeria’s 2013 DHS results,²⁷ one of the lowest coverage rates in the world. Performance is uneven across the country. The best performing states were Osun (83%), Enugu (82%), and Lagos (77%). At the other extreme, the worst performing states were Sokoto and Kebbi (3% each). DTP3 coverage is higher in urban areas and increases with mother’s education.

Looked at another way, about 25% of Nigeria’s children are “fully vaccinated”, defined as vaccinated with BCG, measles, and 3 doses each of DPT and polio. While this is an improvement over 2003, when the percent stood at 13%, it is still quite low. About 21% of all children have received no vaccines, and as such are completely left out of the immunization program. The highest percent of children with no vaccines are in the North East region (45%), Yobe state (65%), and Borno (71%).

Polio Eradication in Nigeria

While Nigeria is struggling to improve its routine immunization program, it is also faced with the challenge of eradicating polio. Nigeria is one of the three remaining countries (along with Afghanistan and Pakistan) that are still classified as polio endemic by the Global Polio Eradication Initiative (GPEI). GPEI is working to support a global “endgame” strategy for polio that aims to: (1) detect and interrupt all poliovirus transmission; (2) strengthen immunization systems and withdraw Oral Polio Vaccine (OPV), (3) contain poliovirus and certify interruption of transmission; and (4) plan polio’s legacy.

GPEI’s estimated resource requirements for the global polio endgame total \$5.5 billion over 2013-2018, with \$3.09 billion over the period 2013-15. Nigeria’s resource requirements for polio eradication were estimated by GPEI at \$0.7 billion over 2013-15, or 22% of the total global requirements during that period. This relatively large share is not surprising given Nigeria’s central role in global polio eradication.

Polio elimination was included in the original SOML costing and contributed about 9% of total costs from 2012-2015. Polio accounted for about 34% of immunization costs.

In this section, we have pulled polio costs out and presented them separately because the dynamics — of resource requirements, resource mobilization, and the consequences of funding gaps — are so distinct from other SOML pillars, as polio eradication in Nigeria is part of a global effort. For polio, resource requirements depend heavily on the trajectory of polio eradication in Nigeria and elsewhere. Fundraising is done on a global basis. What may appear as a funding gap is most likely to be met given the global push for polio eradication. The Nigerian government contributes importantly to the polio eradication effort, both in terms of funding and effort.

The Polio Eradication Initiative in Nigeria absorbs considerable financial and administrative resources. The Initiative employs national immunization days, subnational immunization days, and case-response mop-ups (revaccination). Multiple donors contribute to the polio effort, and the government of Nigeria is putting in substantial resources also: \$27 million from the NPHCDA budget in 2013 and \$22.8 million from the proposed 2014 NPHCDA budget, as well as \$42.6 million from the SURE-P proposed budget. So far in 2014, there have been encouraging results on the Polio Eradication Initiative in Nigeria.

Routine immunization and campaigns for other vaccines

Nigeria is working to improve coverage of the vaccines in its national immunization schedule as well as to introduce new life-saving vaccines such as pneumococcal vaccine. Nigeria delivers immunization both through routine services (in clinics and through outreach) and through campaigns for certain vaccines such as yellow fever, measles, and Meningitis A.

Roles and responsibilities in immunization

The federal government purchases and provides vaccines to the states and LGAs, establishes immunization guidelines, and provides technical support to the states and local governments. The state governments set program objectives and carry out monitoring and evaluation. The LGAs recruit, train, and finance health workers.

²⁶ From GAVI Mid-Term Review Report, October 2013, drawn from WHO/UNICEF DTP3 coverage estimates, 2012 revision, July 2013.

²⁷ National Population Commission, Measure DHS, ICF International. Nigeria Demographic and Health Survey 2013: Preliminary Report, October 2013.

Key challenges identified in the National Routine Immunization Strategic Plan

In 2013, the government, working with partners, prepared the National Routine Immunization Strategic Plan 2013-15 (NRISP). The plan highlights a number of important bottlenecks to immunization coverage in Nigeria. These include broad challenges, such as security problems from militants and insurgents. In both 2012 and 2013, vaccinators were killed in the north. There are many hard to reach subgroups of the population in Nigeria, such as nomadic populations and riverine fishing communities. During 2012, there were vaccine stockouts as well as equipment failures, lack of transport and budget that affected vaccine availability. The Cold Chain Assessment in 2012 found that 43% of cold chain equipment at LGA and health facility levels does not work.²⁸ There are many “missed opportunities” in vaccination. For example, many health workers misunderstand the multi-dose vial policy and turn mothers and children away instead of opening vaccine vials. Many planned sessions and outreach activities are not being carried out. At the health facility level, there are problems with the distribution, training, and supervision of staff. Quality of data at the LGA and health facility level is very poor. And there is weak demand for immunization, particularly in the northern states. The causes of weak demand are multiple, and can include poor quality of health services, inconvenient timing of services, and rude treatment of the population by health workers. There is also poor knowledge, attitude, and practices towards immunization especially in the North. Financing issues are pervasive (both lack of funding and financing delays). There is poor accountability across the levels of government for immunization performance. Finally, the NRISP points out that the polio eradication initiative has negatively impacted routine immunization. Polio eradication activities can confuse the population and attract resources away from other immunization activities.

Resource Needs

Routine immunization resource needs were updated for this report based on the NRISP. The NRISP is an ambitious plan, intended to address Nigeria’s key problems with ineffective supply chain and logistics, poor service delivery, inadequate human resources, weak demand, funding constraints including disbursement delays, lack of accountability, and the negative unintended consequences of the Polio Eradication Initiative (PEI) activities in Nigeria. Delays in the release of funding have adversely impacted timely vaccine procurement and increase the risk of stock-

outs. This problem is continuing in 2014. The goals of the NRISP are to “reduce the number of unimmunized children through the attainment of at least 87% sustained national coverage in which not less than 90% of the local government areas (LGAs) reach at least 80% of infants with all scheduled routine antigens by 2015.”²⁹ The NRISP document states that it was shaped by and is aligned with plans under the SOML initiative.

Both the NRISP resource needs and what was originally extracted from the Nigeria’s 2011 comprehensive Multi-Year Plan (cMYP)³⁰ for the SOML purposes exclude (by and large) personnel and shared costs such as buildings. The costs do not include salaries, but do cover the cost of trainings. They include the cost of traditional vaccines (which Nigeria has been financing for some years) and co-financing requirements for the Global Alliance for Vaccines and Immunization (GAVI), but not the share of vaccine costs paid by GAVI.

Adjustments to the NRISP costing

We replaced the original SOML immunization costs with the NRISP costs, and made changes to the NRISP costing, notably modifying the Inactivated Polio Vaccine (IPV) unit cost from \$3.53 per dose in the NRISP costing to the \$1.00 per dose that GAVI is projecting. This vaccine is projected to be introduced in 2015 (and will be supported by GAVI, if Nigeria submits an application and it is approved). In order to provide the fullest picture of resource requirements, we also included the financing of the pentavalent, pneumococcal, and yellow fever vaccines provided by GAVI. In late 2013, GAVI started to finance Nigeria’s first national yellow fever campaign after almost three decades.

Our cost estimate with these adjustments to the NRISP is remarkably similar to the original SOML estimate when modifications are made for comparability (we removed polio eradication from both and present it separately). Table 6 shows total resource requirements from 2013-15 of \$816.4 million, compared to the original SOML costs of about \$812 million. Note that the time period is not exactly comparable as the NRISP starts in mid-2013. There are many other differences between the two costings as well in terms of activities included even those the totals are quite similar.

The NRISP does not show external assistance contributions but our adjusted estimates include the cost of GAVI-provided vaccines, which account for 26% of total costs over 2013-2015. As it breaks down the expenditures, the

²⁸ P. 20 NRISP

²⁹ Federal Republic of Nigeria, Federal Ministry of Health, National Primary Health Care Development Agency. National Routine Immunization Strategic Plan 2013-2015.

³⁰ The cMYP is a detailed immunization program costing that GAVI requires with applications for support.

Table 6: Routine Immunization Resource Needs: Comparison of Original SOML Cost Estimates with Updated Cost Estimates, 2013-15 (US\$ million)

	Original SOML Cost Estimates	Updated NRISP Cost Estimates (Adjusted)
2013	198.1	187.8
2014	280.7	266.5
2015	333.9	362.1
Total, 2013-15	812.6	816.4

Note: excludes polio eradication

bulk of costs are shown at the federal level (69%). All vaccines and some cold chain equipment are procured there. About 15% of costs are listed at the state level, and about 16% of costs at the LGA level. The NRISP states that “all funds are assumed unsecured in view of the timing of the plan. This plan therefore requires strong resource mobilization efforts by all to ensure success.”

Financing

Donor financing framework

Immunization is supported by a strong donor framework. GAVI is the main donor for routine immunization and campaigns other than polio. Other donors contribute as well, but on a much smaller scale (see below). Nigeria’s Polio Eradication Initiative is strongly supported by the Global Polio Eradication Initiative.

GAVI

GAVI provides vaccines, injection supplies, and cash support to Nigeria. In addition, it funds partners such as UNICEF and WHO to give technical assistance to Nigeria on immunization. When a new vaccine is approved, GAVI provides the vaccine and injection supplies and the country procures a portion of the vaccines as “co-financing”. GAVI continues to supply that vaccine until the country fully graduates from GAVI support. GAVI also offers a cash introduction grant for one-time investments related to the introduction of new vaccines, such as social mobilization, printing of new vaccination cards, and training of health workers. For vaccines delivered through campaigns, such as Meningitis A, GAVI pays for the vaccines as well as a set amount of cash support per target population for the vaccine campaign. GAVI also extends cash support through Health System Strengthening Grants (and previously through Immunization Services Support).

In Nigeria, GAVI has or is currently supporting the following vaccines for campaigns: measles, Meningitis A, and

Yellow Fever. It is also financing Yellow Fever, pentavalent, and pneumococcal vaccines in the routine immunization program.

GAVI also gives Nigeria Health System Strengthening (HSS) support. In 2012, the government of Nigeria submitted a request to reprogram unused HSS and earlier Immunization Support Services (ISS) monies totaling almost \$53 million. Under the proposal, which was approved by GAVI, \$23.8 million was to be spent in 2012 and \$28.9 million in 2013. The funds were to be used for (1) demand creation and accountability in new vaccine introduction states; (2) capacity strengthening of frontline health workers and EPI managers; (3) strengthening of national health management information systems to ensure data quality; and (4) improvements of access to and storage of vaccines. Nigeria submitted a second HSS application in 2013 that was returned to Nigeria for further work; it will likely be re-submitted in 2014. This could be for a total of \$100 million or more in total to be spread out over the next five years. HSS funding is flexible cash support that can be used to finance measures that will improve immunization coverage. Reward payments are built into HSS structure – if Nigeria can show that it is improving immunization coverage, it gets performance payments. GAVI has a policy that countries must have DTP3 coverage of greater than 70% to apply for pentavalent, pneumococcal, rotavirus, and HPV vaccines. Nigeria’s coverage is well below that, but it appears that GAVI has granted Nigeria an exception to this requirement based on its country-by-country approach. Nigeria’s scope for using existing HSS monies and applying for new HSS monies was jeopardized by the GAVI audit results (January to May 2014) that resulted in freezing the reprogrammed HSS/ISS monies mentioned above.

There is an important question regarding when Nigeria might cross the income threshold for GAVI support and become ineligible. Under current rules, each January 1 GAVI checks the country’s most recent GNI p.c. estimate and compares it to the updated eligibility threshold, currently set at US\$1,570. All countries below the threshold continue to be eligible for GAVI support. When a country’s

GNI p.c. crosses the threshold, it can only apply for new vaccine support (for any number of remaining vaccines) one more time, in that year. After that year, its existing support from GAVI will continue for four more years, but the country's co-financing share for vaccines rises steadily and GAVI's contribution declines, until GAVI's support ends. GAVI is currently rethinking its eligibility, co-financing, and graduation policies, so it is possible these policies will change.

In this light, the recent, preliminary rebasing of GDP will almost certainly mean that Nigeria would cross GAVI's eligibility threshold on January 1, 2015.³¹ If this occurs, Nigeria may want to ask the GAVI Alliance for some sort of exceptional grace period to losing eligibility, given sudden nature of the GDP increase.

Other donor support to immunization

Many donors contribute to polio eradication in Nigeria, although on a much smaller scale than GAVI. Note that GAVI's funding comes, in part, from the same donors that are working on immunization in Nigeria (the Bill and Melinda Gates Foundation, the U.K., and USAID for example).

Donors also contribute to routine immunization strengthening, but often through programs that do not permit an estimate of the share for immunization. **DfID** supports programs that are intended to improve governance and management of the health system, strengthen service delivery, and create demand. Increased routine immunization coverage is among the specific targets of these programs. Its PATHS2 and PRRINN-MNCH programs are due to end in 2014. MNCH2 is the next program to be supported by DfID, with an expected start date of May 2014 and a focus on six states (Kano, Kaduna, Katsina, Jigawa, Zamfara and Yobe). DfID's programs primarily operate at the state level, currently in eight states. Its programs also provide some technical assistance at the federal level. DfID cannot estimate how much of the financing goes to routine immunization specifically, as the programs are not designed and managed in that way. **NORAD** is also funding PRRINN-MNCH. As this project is ending soon, **NORAD** is shifting out of immunization support in Nigeria.

The **Gates Foundation** and the **Dangote Foundation** are supporting a relatively small but potentially important project in Kano State. The state has established the State Primary Health Care Management Board (SPHCMB) with responsibility for routine immunization. Employees have been transferred from the State to the SPHCMB. The SPHCMB established a budget line for a pooled basket of funds for primary health care services. There is also a

line for routine immunization in the SPHCMB budget. The expected funding contributions from the Gates Foundation, the Dangote Foundation, and Kano state are included in the likely funding projections that follow, as they are specifically for immunization.

The **EU** is providing about \$37.5 million in the Support to Scale Up Maternal and Newborn Health Outcomes for Kebbi and Adamawa states (2013-17). The EU is also financing about \$65m to support both routine immunization and polio eradication (EU Support to Immunization Governance in Nigeria (2011-17)). JICA has paid for cold chain equipment. Since funding for routine immunization cannot be separated out from the overall funding (from data available), this is not included in the projections below.

Other donors in immunization include **USAID** (Targeted States High Impact Project), the **World Bank** (Health Systems Development Project II), and **JICA**. As mentioned otherwise, funding for immunization cannot be disaggregated from the total. **USAID** is considering taking its support for routine immunization out of the integrated program approach and separating it into immunization-specific technical assistance given that it is working in two of the lowest performing states, Sokoto and Bauchi. **USAID** is also funding CDC to work in routine immunization. It is establishing the "CORE" group in Nigeria with the goal of helping NGOs work more effectively in immunization.

Government contributions to immunization

States and LGAs play a major role in immunization program delivery, but their contributions cannot be quantified, given government reporting systems. The FMOH finances traditional EPI vaccines, pays the GAVI co-financing contribution for those vaccines introduced with GAVI support, and supports polio eradication. In 2013, the FMOH allocated \$36.87 million to vaccines. This has increased to \$43.48 million in the 2014 proposed budget. For polio eradication, the FMOH (NPHCDA) allocated \$27.12 million in 2013. This has fallen to \$22.82 million in the proposed 2014 budget, but SURE-P has a large allocation for polio eradication in the 2014 proposal — an additional \$42.63 million. The government budget for vaccines will need to increase in the coming years as new vaccine coverage improves and the GAVI co-financing obligation increases. Once Nigeria crosses the GAVI eligibility threshold (as discussed previously), co-financing requirements will increase sharply as GAVI contributions are phased out.

³¹ Given the recent and preliminary nature of the rebasing exercise, as well as the possibility that Nigeria could apply for an exception, we have, in our analysis, assumed that Nigeria will remain eligible for GAVI support.

Table 7: Routine Immunization Resource Needs, Likely Financing, and Funding Gap: 2014-17 Projections (US\$ million)

Medium Scenario	2014	2015	2016	2017	2014-2017
Total Resource Needs	266.5	362.1	—	—	628.6
Total Likely Financing	149.8	238.9	—	—	388.7
Funding Gap	116.7	123.2	—	—	239.9
Pessimistic Scenario	2014	2015	2016	2017	2014-2017
Total Resource Needs	266.5	362.1	—	—	628.6
Total Likely Financing	129.8	213.9	—	—	343.7
Funding Gap	136.7	148.2	—	—	284.9
Optimistic Scenario	2014	2015	2016	2017	2014-2017
Total Resource Needs	266.5	362.1	—	—	628.6
Total Likely Financing	149.8	243.9	—	—	393.7
Funding Gap	116.7	118.2	—	—	234.9

Alternative Scenarios

We built on the NRISP work to create three financing scenarios. For all scenarios, we assumed Nigeria used the remaining financing from the first GAVI HSS grant in 2013.³² We also included GAVI support for IPV vaccine in 2015 and the provision of an IPV vaccine introduction grant from GAVI in 2014. We included GAVI's contribution to the procurement of pentavalent, yellow fever, and pneumococcal vaccines on the financing side. We added the relatively small, but important, Kano State project with the Gates Foundation and the Dangote Foundation. For the low financing scenario, we assumed that Nigeria was unsuccessful in obtaining its second HSS grant in either 2014 or 2015. In the medium scenario, we assumed Nigeria obtained the second HSS grant in 2014 and expended \$20 million in both 2014 and 2015 from the assumed \$100 million of support to be spread over five years. In the optimistic scenario, we assumed Nigeria obtained the second HSS grant in 2014, and expended \$20 million in 2014 (of the \$100 million). Furthermore, we assumed that Nigeria could show evidence of DTP3 coverage improvements that resulted in a reward payment in 2015, resulting in overall funding from that HSS grant of \$30 million in 2015.

Based on these scenarios, Nigeria would have a funding gap ranging from a low of \$235 million to a high of \$285 million over 2014-2015, equivalent to 37-45% of the total funding requirement. There may be funding from other donors and

from state and local governments that could reduce the funding gap further, but it is difficult to quantify this.

We have not attempted to estimate costs for 2016 and 2017 because the team did not have the detailed information to determine what specific investments would be needed in cold chain, training, and other non-vaccine costs in these years. Some of the costs in the NRISP will continue in these years, but many others are one-time investments such as infrastructure rehabilitation, cold change improvements, and training. There will also be new costs associated with new vaccine introductions and there may be other one-time investment costs.

If Nigeria can steadily improve its immunization coverage, its success will be rewarded by GAVI HSS performance payments. The immediate challenge Nigeria faces is in improving coverage -- this is what the NRISP is intended to achieve.

Polio

Table 8 summarizes resource needs, likely financing, and the funding gap for polio as reported by the Global Polio Eradication Initiative (GPEI) as of June 1, 2013. We were unable to obtain updated forecasts from the GPEI and as a result did not generate any scenarios on likely financing. If the proposed 2014 contributions from FMOH and SURE-P

³² This scenario was created before it became known that the GAVI audit conducted in early 2014 resulted in the freezing of reprogrammed HSS/ISS funds

Table 8: Polio: Resource Needs, Likely Financing, Funding Gap: 2013-15 (US\$ million)³³

	2013	2014	2015	Total
Resource Needs	286.7	219.1	187.5	693.3
Likely Financing	244.0	108.8	2.5	289.8
Funding Gap	42.6	110.3	185.0	403.5

are approved (\$65.45 million) then the funding gap for 2014 would fall from \$175.9 million to about \$110.4 million. As discussed above, fundraising has continued since the GPEI reported these figures, and the current funding gap could well be much smaller.

The Polio Eradication Initiative is likely to continually show a funding gap given the nature of Nigeria's large needs and the ongoing fundraising. But Nigeria, as one of the three polio endemic countries in the world, is a top priority for GPEI efforts so we should not be alarmed at the apparent gap. The government has little role to play in fundraising, but it does make an important financing contribution.

Funding is as expected most secure for 2013 and less secure in 2014 and 2015. Confirmed funding for operational costs comes from CIDA, the Gates Foundation, USAID, the Federal Government of Nigeria, UNICEF, AusAid, Rotary International, KfW, with additional WHO and UNICEF providing technical assistance, social mobilization and surveillance.

Conclusions

Nigeria's top priorities in immunization are to improve coverage in the routine immunization program and to eradicate polio. Immunization is one of the areas in SOML with a strong donor architecture. GAVI is the major source of external assistance for routine immunization (and campaigns, except for polio) and its rules and guidelines are clear. GAVI's Health System Strengthening cash support rewards coverage improvements so that if Nigeria can make significant coverage gains, it will access additional GAVI cash support that it can use to further strengthen immunization. Like many areas in SOML, immunization

delivery is complicated by Nigeria's weak health system and poor accountability across different levels of government for immunization program. The Government's NRISP is designed to address many of these problems. The Polio Eradication Initiative in Nigeria is also backed by strong donor architecture. Success in eradicating polio would have a large impact on Nigeria's routine immunization system by freeing up resources for other uses. Our analysis shows a significant gap in financing for routine immunization and polio eradication, but the gap is probably overstated in both cases. For routine immunization, not all donor contributions have been captured, and state and LGA contributions have also not been quantified. In the case of polio eradication, the financial information is outdated given the continual nature of the fundraising effort. Nevertheless, the overall financing picture for immunization shows shortfalls which need to be addressed.

Key Takeaways – Immunization

- The resource needs estimate for routine immunization for 2013-15 is \$628.6 million.
- According to our analysis, Nigeria is expected to have a funding gap that ranges from \$235 to \$285 million over 2014-2015.
- Demonstrated progress is critical in immunization, for if Nigeria can improve its immunization coverage, it will be the recipient of future GAVI HSS performance payments.
- While immunization is one of the SOML pillars that possess a strong donor architecture, with GAVI a major source of external assistance, this may be in jeopardy as a result of the recent revision of GDP.

³³ Global Polio Eradication Initiative. Financial Resource Requirements 2013-2018, as of 1 June 2013.

Malaria

Introduction

Malaria, endemic in all of Nigeria's regions, is one of the most important causes of child death in the country and contributes as many as 225,000 deaths every year. Although the national malaria program has made considerable progress in recent years in raising the ownership and use of insecticide-treated bednets through mass distribution campaigns, it has struggled to ensure prompt and effective diagnosis and treatment. Due to the weakness of the health system, people in many parts of the country resort to drug shops for treatment of potentially malarial illnesses. Very few children with fevers are appropriately tested for malaria and, according to the 2013 DHS, only 8% of children in urban areas and 5% in rural areas received the recommended treatment, artemisinin combination therapy (ACT).

Malaria is one of the most important and costliest SOML pillars, accounting for 38% of projected resource needs in the original SOML costing carried out in 2012. This section presents our updated and revised analysis of resource needs and likely financing for the malaria pillar. It describes a single cost scenario and three alternative financing scenarios.

Resource Needs

The starting point of our cost projection is the original 2012 SOML costing, and we have retained the major features of this analysis. In particular, we have considered only three interventions: bednets, diagnosis, and treatment with ACTs (intermittent presumptive treatment for pregnant women is included in the essential medicines pillar). Neither indoor residual spraying, seasonal chemoprophylaxis for children, nor larvaciding are included.³⁴ Furthermore, the analysis is essentially restricted to commodities, although an allowance for distribution is added to the bednet cost — this emphasis on commodities is typical of malaria costing exercises and reflects costs that are borne by malaria programs specifically.³⁵ Health system costs are

not included, nor are necessary expenditures for program planning, monitoring and evaluation, behavior change communication and advocacy. Coverage targets are high, despite the weakness of the Nigerian health system and the dominant role played by the informal private sector, over which government has relatively little influence.

We have updated and modified the 2012 cost projections in several ways. The most important modifications are:

- Extension of the analysis from 2015 to 2017
- Use of bednet need estimates from an April 2013 malaria gap analysis (provided by CHAI) in place of the estimates in the original SOML costing.³⁶ Since net requirements dominate the costing projections, these changes have significant implications for overall costs.
- Correction of technical errors in the calculations of ACT and RDT needs (see Annex III).
- Adjustment (reduction) of diagnostic coverage targets, particularly in the private sector. These adjustments are similar to adjustments incorporated in the April 2013 gap analysis.

We have retained the commodity unit costs used in the original costing.³⁷

Projected total costs are \$1.6 billion for the years 2014-2017 (Table 9). Annual costs are highest, at about \$440 million in 2014 and 2015 and decline somewhat thereafter, primarily because bednet requirements fall as the major initial distributions are completed. ACT requirements are also projected to fall somewhat, as bednet use reduces malaria transmission and as improved diagnosis stems the use of antimalarial drugs to treat other illnesses. But rising diagnostic costs (from expanding coverage) ensure that the total cost of case management (diagnosis and treatment) remains quite constant.

Total costs are dominated by bednets: net purchase and distribution accounts for 61% of projected costs between 2014 and 2017. ACTs contribute another 22% and RDTs the remaining 16% over this period. Bednet costs will remain high for the foreseeable future, even after initial distribution

³⁴ SOML documents do not make explicit the basis for leaving certain malaria interventions out of the SOML package, but our understanding is that IRS was excluded on cost-effectiveness grounds. Seasonal malaria chemoprophylaxis, which is potentially very cost-effective, is only now being piloted in the North. If it proves successful, it would be worth including this intervention in any future revision of SOML costs.

³⁵ See the costing done for the Global Malaria Action Plan or Kiszewski et al (2007): Estimated global resources needed to attain international malaria control goals. *Bulletin of the World Health Organization* 85 (8): 623-30.

³⁶ The approach used in the original SOML calculations, which were in turn taken from a multi-country RBM-coordinated resource needs gap analysis, are not well suited to forward projections, as each year's requirement is based on projected distributions in preceding years. Moreover, these estimates consider only distribution by mass campaigns, while the April 2013 analysis assumes a growing role for routine distribution through EPI and ANC. Since the April analysis 2013 does not cover 2012, we used the original SOML figure for this year. For 2017 we used our own simple formula.

³⁷ The assumed \$5.8 bednet cost is higher than currently prevailing international prices, but it includes allowances for shipping (\$0.25) and distribution (\$2.25). \$1.0 per course of ACTs is a reasonable average over prices for different age formulations. \$1.0 for RDTs is too high as a pure commodity cost, but can perhaps be justified as a way to include some of the health system costs associated with case management.

Table 9: Malaria resource needs (US\$ million)

Intervention	2013	2014	2015	2016	2017	Total 2014-17
Bednets	232	281	286	196	206	969
ACTs	108	103	93	83	81	360
RDTs	47	55	60	64	73	252
Total	387	439	439	343	360	1,581

campaigns have reached most of the population, because nets will need to be replaced every three years and additional nets provided to cover Nigeria's rapidly growing population.

Since bednet programs dominate costs, the projections are most sensitive to the assumptions concerning these programs. Most importantly, a reduction of \$1 in the assumed cost of purchasing and delivering a net would save \$138 million over the period 2013 to 2015. Similarly, assuming that bednets had to be replaced every four years instead of every three would, over the long run, save about 15% of total malaria program costs.

In some countries, there are potentially large savings to be found in geographical prioritization, in particular by focusing bednet distribution on areas of high transmission. But almost all of Nigeria suffers from high transmission, so there are few areas which can be left out of vector control programs without putting many people, especially children, at risk. Given the high prevalence of malaria, and the correspondingly high fraction of fevers that are caused by malaria, de-emphasizing introduction of diagnosis and continuing to treat with anti-malarials "presumptively" might make sense in some areas. But since the cost of RDTs is small relative to that of bednets, this would have relatively little impact on total malaria costs. In any case, diagnosis will not soon be rolled out in most of the informal private sector where the majority of Nigerians seek care.

As mentioned above, our projections do not include some interventions that are currently an important element of the national malaria control effort (indoor residual spraying) or that may be a particularly promising and cost-effective way to prevent child death (seasonal chemoprophylaxis). They also do not include the full range of non-commodity costs borne either by the malaria program itself or by the broader health system, on which treatment of malaria imposes a considerable burden.

An important criticism of these projections could be that the coverage targets for the included interventions are unrealistically high. In the case of bednets, costs are estimated based on requirements to reach and sustain ownership of one net for every 1.8 people — essentially universal coverage. Nigeria has made quite rapid progress in expanding net ownership — the fraction of households with at least one insecticide-treated net has risen from 8 to 50% in just five years, and the primary obstacles to high effective coverage will probably be usage and net replacement rather than initial distribution, so we have retained the bednet coverage targets. The targets for ACT and RDT coverage will be much harder to reach, as they depend on functioning health services. We have reduced the targets for RDTs, because of the difficulty of introducing parasitological diagnosis into the informal private sector, but not for treatment.

Finally, it would probably make sense to update estimates of commodity and (in the case of bednets) distribution costs using Nigeria-specific data. Major reductions in the prices of any of the three major malaria commodities are unlikely over the next few years, however, as markets for all three are already mature³⁸.

Financing and Alternative Projections

We have used information from each of the major international donors to malaria programs in Nigeria to update the financing estimates in the original SOML costing spreadsheet.

In order to allow comparison with the cost projections, we have considered only funding for included SOML interventions and, where possible, used estimates of the numbers of commodities (bednets, ACTs, and RDTs) to be procured or financed. Where commodity numbers were not available, we converted projected financing into commodities at the unit costs used in the cost projections.³⁹ Because most donors also support other malaria interventions

³⁸ Prices for LLINs, the most important malaria commodity, have fallen substantially in recent years. Some of that drop resulted from oversupply, however, and supplies have voiced concern that current prices may be difficult to sustain. See Bahl, K. & P. Shaw (2013): Expanding access to LLINs: A global market dynamics approach. Results for Development Institute.

³⁹ This procedure leads to some inconsistencies. In particular, in cases where a donor assumes lower unit costs for commodities and provides the amounts to be procured, our analysis inflates the donor's financial contribution. Where commodity amounts are not provided, our projections may underestimate the commodity contribution.

and non-commodity costs of included interventions, our projections of SOML financing from these donors are generally lower than their total contribution to malaria control programs in Nigeria.

The most important assumptions concerning the current sources of funding for Nigeria's malaria program are described here; further details can be found in Annex IV and in the notes to the spreadsheet.

The main international sources of malaria funding are the Global Fund, the US government's President's Malaria Initiative (PMI), the Affordable Medicines Facility for malaria (AMFm), the UK government through DfID, and the World Bank.

The Global Fund

Nigeria is currently drawing on a Round 8 malaria grant, which was supplemented in 2013 by \$167 million in "so-called" interim funding, designed to sustain the program until new funds became available through the new funding model. Amounts of available funding and likely commodity numbers were obtained from grant documents, especially the grant performance framework dated October 2013. In the medium and optimistic scenarios, all the remaining round 8 and interim funding is spent by the end of 2014. In the pessimistic scenario, half of the amount slated for 2014 is spent instead in the first half of 2015.

In March 2014 Nigeria learned that its malaria "envelope" – the amount for which it will be eligible to apply for the next three-year period under the Fund's new funding model – will be \$499.5 million, although this figure apparently includes some existing as well as truly new money⁴⁰. This money would probably begin to flow in 2015. Under the new funding model, countries are in principle free to reallocate across AIDS, TB, and malaria within their overall envelope. In our optimistic scenario Nigeria receives 10% more than in the medium scenario, either because it chooses to reallocate towards malaria or, more likely, because it is able to capture some of the so-called incentive funding offered by the Fund, which is outside the country allocation. In the pessimistic scenario, the Global Fund malaria contribution is 10% lower. In the pessimistic scenario we further assume that money does not start to flow from the new grants until mid-2015.

Finally, we allocated the funding across interventions according to the distribution of projected SOML costs in 2014.

AMFm

The Affordable Medicines Facility for malaria (AMFm) was a special initiative hosted by the Global Fund that subsidized

ACTs in 8 pilot countries, included Nigeria, for the private as well as the public sector. Although the initiative was officially integrated into normal GF processes at the end of 2012, earmarked funding remained available in 2013 from a special transition fund, and the UK government has agreed to provide continued targeted support for the private sector in 2014. In our pessimistic scenario, this source of funding ends after 2014. In the medium scenario, the UK extends funding through 2105, while in the optimistic scenario, support continues at the same level through 2017, from the same or a new source.

PMI

The US government provided \$73 million for malaria control in Nigeria in 2014, although not all of this went to activities included in SOML. The preliminary budget for 2014 is somewhat lower, but preliminary budgets were raised in both 2012 and 2013. In our medium and optimistic scenarios, funding continues at 2013 levels through 2017. In the pessimistic scenario, funding falls off by 25% in 2014 and then remains constant at the lower level.

The breakdown of expenditure and commodity amounts was obtained from PMI documents.

DfID

DfID's SUNMAP program has been extended through 2015. As further funding is thought to be likely, we assumed that support would continue at current levels through 2017. In the optimistic scenario, funding increases in 2016 and 2017. Amounts and intervention breakdown were obtained from the business case for SUNMAP extension.

World Bank

The World Bank's Malaria Booster Program has been an important source of funding for Nigeria's program, but the Bank is moving away from vertical disease programs. Nigeria has been granted an extension until mid-2014 on this existing IDA credit – we assume no further malaria-specific support from the World Bank after that.

Government of Nigeria

In the pessimistic and medium scenarios we include only a modest contribution to net purchase identified in the April financing analysis. In the optimistic scenario, we assume that the government contribution increases to 25% of the Global Fund's projected malaria spending in malaria, as called for in the Fund's counterpart financing policy for lower-middle-income countries.

⁴⁰ See <http://www.theglobalfund.org/en/fundingmodel/allocationprocess/allocations/>

Table 10: Projected funding by scenario (US\$ million)

Source	2013	2014	2015	2016	2017	2014-2017
Resource needs	387	439	439	343	360	1,581
Financing: pessimistic scenario	220	361	225	195	195	976
Financing: medium scenario	220	464	304	233	233	1,234
Financing: optimistic scenario	220	501	329	344	354	1,529
Gap: medium scenario	167	(25)*	136	109	126	371
% funded: medium scenario	57%	106%	55%	50%	47%	78%

* Note that negative funding gaps are zeroed out to reflect that financing is not fungible across time and excess funding does not necessarily carry over into following years.

In our medium projection, \$1,234 million is available for SOML malaria interventions in Nigeria between 2014 and 2017, corresponding to 78% of need over this period (Table 10). There is a shortfall of \$346 million over the four-year period. In the pessimistic projection, only 62% of need is met, while in the optimistic projection 97% of need is financed. The projected funding gap is large in all years except 2014, when interim funding from the Global Fund is available.

The Global Fund is the largest donor in all scenarios, accounting for 58% of available resources over 2014-2017 in the medium scenario (Table 11). This support includes Phase 2 grants from earlier proposal rounds, recently approved interim financing, and new funding assumed to become available through the Global Fund's new funding model starting in 2015. Other important donors to malaria programs are the US, through the President's Malaria Initiative (PMI); DFID, through the Sunmap program and, at least in 2014, the AMFm transition fund; and the World Bank, through its Malaria Booster Programme.

In our medium scenarios, government contribution to specific intervention highlighted in the SOML initiative under the National plan is low. By funding primary and secondary levels of the health system — paying providers and maintaining facilities — state and local governments do make important contributions to malaria management, but this financing is not quantified and captured in our analysis.

In our breakdown, the big financing gap is for bednets — in fact, in some years we show an excess of funding for ACTs. But this is largely a consequence of the arbitrary way we have allocated future funding across interventions, coupled to the availability of a large bolus of dedicated funding for ACTs in 2013 and 2014 in the form of AMFm transition funding. In practice, the malaria control program and its partners will request and allocate funding across these interventions according to need, so future funding can in practice be treated as fungible.

Given the Global Fund's importance in malaria financing, our projections are most sensitive to assumptions about this donor, in particular the assumption that Nigeria will

Table 11: Projected funding by source in the medium scenario (US\$ million)

Source	2013	2014	2015	2016	2017	Total 2014-2017	Percent 2014-17
Global Fund	79	265	150	150	150	715	58
AMFm	61	70	70	0	0	140	11
PMI	58	58	58	58	58	232	19
DfID	5	17	17	17	17	68	6
World Bank	9	46	0	0	0	46	4
GoN	9	9	9	9	9	36	3
Total	220	464	304	233	233	1,234	

continue to be subject to a cap. Relaxing this assumption would be one way to help close the financing gap. We have also assumed, in our medium scenario, that Nigeria will choose to divide its Global Fund resources among the three included diseases according to the nominal global allocation chosen by the Fund, which accords 32% to malaria. Under the new funding model, Nigeria will be free to alter this allocation, but there is of course no guarantee that it would choose to increase malaria's share.

In sum, we project that funding for the SOML malaria pillar, while substantial and relatively predictable compared to funding for some other, is likely to fall short of requirements, both in the run-up to 2015 and in later years. The purchase, distribution, and replacement of bednets will remain the dominant expense, while the Global Fund will remain the most important funder. The results of the Fund's recent replenishment meeting and the resulting three-year funding envelope for Nigeria will place rigid constraints on funding available from this source. The greatest opportunity to close the financing gap would be for the Nigerian government to increase its contribution to these highly cost-effective interventions from its current modest level.

Key Takeaways — Malaria

- Projected total costs for the malaria pillar are \$1.6 billion for the years 2014 through 2017. Projected financing (in the medium scenario) is \$1.2 billion, leaving a gap of over \$400 million.
- Total costs are dominated by bednets: net purchase and distribution accounts for 61% of projected costs between 2014 and 2017.
- Domestic sources contribute only 3% of SOML malaria funding.
- Global Fund is the largest donor to the malaria pillar, accounting for 57% of available resources over this period in the medium scenario. Decisions around whether the GF will continue to split its funding evenly among the three included diseases and whether Nigeria will be subject to cap will significantly affect the size of the funding gap.

Maternal and Child Health

Introduction

With 847,000 child deaths and 40,000 maternal deaths per year,⁴¹ Nigeria has among the highest burdens of maternal and child mortality in the world, and the largest gaps to bridge in achieving its Millennium Development Goals 4 and 5. A large share of those maternal and child deaths are preventable through services like emergency obstetric care, antenatal care, and provision of essential medicines and vaccinations to children.

SOML's Maternal and Child Health (MCH) pillar activities focus on the rehabilitation, stocking, and staffing (nurses, community health workers) of Primary Health Centers (PHCs) and General Hospitals where these life-saving services for pregnant women, infants and young children are provided. Although the MCH pillar activities are expected to reach a small share of Nigeria's facilities (originally 5,000 PHCs were targeted out of perhaps 23,000, and this has now been revised downward), it is hoped that they will serve as a model for broader improvements in health services. The MCH facility upgrades represent the main attempt within SOML to address directly the health system weaknesses that impede successful delivery of all SOML interventions.

Resource Needs

The MCH pillar began with aspirations for NPHCDA to build and maintain 5,000 new, fully staffed and equipped Primary Health Centers (PHCs) between 2012 and 2015 with funding from SURE-P. However, there have been serious setbacks in implementation, stemming in part from funding shortfalls. In 2013, SURE-P allocated the full \$100 million expected to NPHCDA for PHCs that was scheduled, but only 25% of the \$100 million was budgeted in 2012. As a result of this and other bottlenecks, only 1,000 PHCs were operational by the end of 2013 (compared with the 3,500 that were originally planned for the end of 2013). Furthermore, not only was the shortfall in funding not recuperated in the 2014 budget, but the proposed 2014 SURE-P contributions to MCH is well short of original expectations (\$75 million instead of \$150 million).

In light of these developments and indications that the targets of the MCH pillar will be scaled back in 2015 and beyond in response to the downward revision in SURE-P funding, we have re-calculated annual resource needs⁴². As of February 2014, 1,200 PHCs are operational, and a

⁴¹IHME 2012

⁴²Based on November 2013 and February 2014 updates from Dr. Oshin

Table 12: MCH Resource Needs*, 2014-2017 (US\$ million)

	2014	2015	2016	2017	2014-2017
Commodities	6.2	7.7	9.2	10.8	33.9
Staffing	71.0	121.3	139.4	158.2	489.9
Training	0.8	0.5	0.5	0.5	2.3
Distribution	0.5	0.6	0.7	0.9	2.7
Infrastructure and Equipment	39.4	23.5	20.2	20.7	103.9
Monitoring and Evaluation	1.6	1.0	0.7	0.7	4.0
Total	119.6	154.6	170.7	191.8	636.6
PHCs (end of year)	1,500	1,800	2,100	2,400	

further 300 are expected to be fully functioning by the end of 2014. Based on a February 2014 update from the MCH director in the SURE-P programme, we assume that 2,400 PHCs (just under half of the original target of 5,000 PHCs) are rehabilitated and operational by the end of 2017.

In addition to updating the costing model with February 2014 unit costs provided by SURE-P MCH staff based on actual SURE-P expenditure on drugs, training, and facility renovations, we corrected the original costing's treatment of inflation. These changes result in a downward revision of aggregate costs. Table 12 breaks down resource needs by year and by expenditure type.

Financing

The SURE-P MCH programme is scheduled to end in 2015 and only about \$200m of the approved \$500m has been disbursed. Only in 2013 was the full amount budgeted.

Given the lack of compensation for the 2012 shortfall in 2013 or 2014, we do not project that 2015 SURE-P funding will make up for any past shortfalls. In our medium projection in Table 13, we assume that SURE-P funding will continue through 2017 at its 2014 level.

Another source of funding for the MCH facility upgrades has been the MDG debt relief fund. This stream of financing is not expected to continue after 2015. As shown in Table 14, we project a gap of \$296 million over 2014-17, amounting to nearly half of the \$637 million needed for the MCH pillar.

Thus far, the MCH pillar has operated almost entirely on domestic funding, and significant external contributions were not planned at its launch in 2012. In this regard, MCH is unique among the SOML pillars, most of which depend heavily on external funding. However, given the shortfall in funding from SURE-P, it may be advisable to seek to draw

Table 13: MCH Likely Financing, 2014-2017 (US\$ million)

	2014	2015	2016	2017	2014-2017
SURE-P	75.0	75.0	75.0	75.0	300.0
MDG Funding	20.3	20.3	0.0	0.0	40.5
Total	95.3	95.3	75.0	75.0	340.5

Table 14: Medium Scenario Funding Gaps, 2014-2017 (US\$ million)

	2014	2015	2016	2017	2014-2017
Total Resource Needs	119.6	154.6	170.7	191.8	636.6
Total Likely Financing	95.3	95.3	75.0	75.0	340.5
Funding Gap	24.3	59.3	95.7	116.8	296.1

Table 15: Pessimistic Scenario Funding Gaps, 2014-2017 (US\$ million)

	2014	2015	2016	2017	2014-2017
Total Resource Needs	119.6	154.6	170.7	191.8	636.6
Total Likely Financing	95.3	95.3	0	0	190.5
Funding Gap	24.3	59.3	170.7	191.8	446.1

Table 16: Optimistic Scenario Funding Gaps, 2014-2017 (US \$ million)

	2014	2015	2016	2017	2014-2017
Total Resource Needs	119.6	154.6	170.7	191.8	636.6
Total Likely Financing	95.3	120.3	100.0	100.0	415.5
Funding Gap	24.3	34.3	70.7	91.8	221.1

in donor funding, showcasing the performance of 1,200 functioning PHCs to donors to demonstrate the initiative's competency and impact on the health of the population. There are also discussions about transferring administrative and financing responsibilities over the rehabilitated PHCs to the state level.

Alternative Projections

To explore the impact of uncertainties in financing, we generated pessimistic and optimistic alternative scenarios. These scenarios provide reasonable bounds for the funding gap for the MCH pillar, which we incorporate into the cross-cutting scenarios in Chapter IV.

In the pessimistic scenario (Table 15), SURE-P funding is only \$75 million in 2015, as in 2014, and does not continue after the February 2015 elections, leaving 70% of the MCH resource needs unfunded.

In an optimistic scenario (Table 16), we envision the SURE-P programme being extended through 2017 at its 2014 level. The funds would help cover some of the costs of continuing to run the PHCs and enable the initiative to complete some of PHCs that were not finished in 2014-2015. However, about 50% of the MCH pillar still remains unfunded in this scenario.

Key Takeaways – MCH

- Access to and quality of primary health services remains a major obstacle to improving maternal and child health in Nigeria. The MCH pillar is critical because it focuses on building, stocking, and staffing PHCs, which are the platform for delivering many SOML interventions.
- The original estimated resource needs for the MCH pillar (\$500 million from 2012-2015) were expected to finance 5,000 PHCs by 2015. That target has been scaled back considerably in this analysis (to 2,400 PHCs by 2017) to reflect lower than expected SURE-P funding for the MCH pillar, which is likely to only reach \$275 million in total for the 2012-2015 period.
- Despite only having a single funder, there is considerable uncertainty on likely financing for the MCH pillar because it is unclear whether SURE-P funding will continue after 2015.
- Under our revised analysis, in the medium scenario there is a shortfall of \$296 million over 2014-17, nearly half of the required funds for the MCH pillar.

Nutrition

Introduction

With 37% of its under-five children classified as stunted, 29% underweight, and 18% wasted,⁴³ Nigeria has more malnourished children than any other sub-Saharan African country. Micronutrient deficiencies (such as for vitamin A, zinc, iron, folic acid, and iodine) are common, and malnutrition contributes to 53% of under-five child deaths.⁴⁴ Moreover, 63% of women are anemic and 31% are iodine deficient, increasing maternal and infant mortality. Underlying these problems are infectious diseases, inadequate protein-calorie food intake, suboptimal infant and young child feeding practices, and, at a deeper level, poverty.

Under-nutrition is most severe in northern Nigeria, where one out of three children under five is underweight, one half are stunted, and one fifth are wasted. In the South, the percentage of stunted (approximately 20%) and wasted (4%) children is much lower, reinforcing a geographic disparity that cuts across multiple health indicators.⁴⁵ In the ten northern most states alone, there are an esti-

mated 900,000 under-five children with severe and acute malnutrition. Existing nutrition-specific programs focus on growth monitoring, micronutrient fortification, management of acute malnutrition, and other interventions to combat micronutrient deficiencies, but their coverage is inadequate to the scale and scope of the problem. The 2013 Lancet series on nutrition outlined a set of cost-effective interventions that should be included in nutrition programs to address Nigeria's daunting nutrition situation, and many of those have been incorporated into the new National Strategic Plan of Action for Nutrition.

Resource needs

The original SOML PDU model for nutrition was a preliminary, highly aspirational costing exercise. It focused entirely on Community Management of Acute Malnutrition (CMAM) for under-5 children. Since mid-2013, the Federal Ministry of Health has been developing NSPAN, which covers a larger set of nutrition interventions, including complementary food to prevent Moderate Acute Malnutrition (MAM), salt iodization, Vitamin A supplementation for children, therapeutic Zinc supplements with ORS, iron-folate supplementation for pregnant women, multiple micro-

Table 17: Nutrition Resource Needs by Intervention 2014–2017 (US\$ million)

Intervention	2014	2015	2016	2017	2014-2017
Community Nutrition Program	3.5	11.3	19.2	27.0	61.1
Vitamin A	0.3	1.1	1.8	2.5	5.7
Therapeutic Zinc (ORS)	2.2	7.0	11.9	16.7	37.8
Micronutrient Powders	1.7	5.7	9.6	13.6	30.6
Deworming	1.5	4.9	8.3	11.7	26.4
Iron Folic Acid	1.0	3.3	5.6	7.8	17.7
Iron Fortification of Staples	3.5	11.3	19.2	27.0	61.1
Salt Iodization	0.2	0.6	1.1	1.5	3.4
CMAM	11.3	36.6	62.0	87.3	197.2
Complementary Foods	11.9	38.8	65.6	92.5	208.9
Capacity Building	6.7	10.0	10.0	3.3	30.1
Monitoring and Evaluation	0.7	2.4	4.1	5.8	13.0
Household Contribution	(5.9)	(19.2)	(32.6)	(45.9)	(103.6)
Total	38.6	113.9	185.8	251.0	589.3

⁴³ DHS 2013

⁴⁴ NSPAN 2014

⁴⁵ DHS 2013

nutrient powders, and deworming, community programs for growth promotion and iron fortification of staple foods. All ten interventions, with the exception of deworming and iron fortification of staple foods, are included in the 2013 Lancet package of cost-effective of nutrition interventions. As of the time of writing, the plan is being finalized and awaits sign-off.

NSPAN proposes to deliver these interventions through a variety of platforms – MNCH weeks, community nutrition programs, and market-based delivery – which, used in conjunction, can reach the vast majority of Nigerian mothers and children. The NSPAN, which is costed with World Bank technical assistance and methodology,⁴⁶ also covers capacity building (assumed to be 9% of intervention costs), monitoring and evaluation and research costs (2% of interventions costs), which were not accounted for in the earlier PDU exercise. The World Bank methodology also assumes that 15% of the total cost of implementing the nutrition plan can be covered by private household contributions, leaving the remaining 85% as resource needs to be met by public investment. We based our resource needs estimates on the latest available draft (April 2014) of the NSPAN, taking into consideration the first four years (2014-17) of the five-year plan.

Our new projections of resource needs for the nutrition pillar, drawn from one of the scale-up strategies (Strategy 5a) costed by the World Bank and identified in the NSPAN, are shown in Table 17. Although they scale up to the lowest levels of the ten interventions (reaching 35% coverage by the end of 2017), CMAM and complementary foods contribute the most to total resource needs because they have the highest unit cost.

Financing

To project likely financing (Table 18), annual estimates of available external financing were updated from the 2012 PDU figures which were based on UNICEF projections for 2014-2017. A number of funders (including DFID, CIFF and the EU) channel their contributions to nutrition in Nigeria through UNICEF's CMAM, Infant and Young Child Feeding, Micronutrient Supplementation, and Policy Support programs.

In total, significantly more financing for nutrition is available than was originally estimated by the PDU in 2012. This is largely due to our inclusion of CIFF's CMAM commitment (\$8.6 million per year), investments by the Global Alliance for Improving Nutrition (largely funded by the Bill and Melinda Gates Foundation) and DFID's Working to Improve Nutrition in Northern Nigeria (WINNN) program, which averages roughly \$13 million per year and runs through mid-2017. One important source of financing that is not accounted for is the World Bank's new Results-Based Financing program, which is under preparation. As of April 2014, it is unclear how much of that program will be devoted to nutrition.

On the domestic financing side, we assume that the Government of Nigeria will continue its baseline spending of \$10 million per year for nutrition. However, as of April 2014, it appears unlikely that the Government will follow through on its Nutrition for Growth commitment to devote an additional \$20 million per year on nutrition. This leaves the domestic share of financing very meager, at less than a quarter of total likely financing for nutrition and an insignificant amount compared against the large resource needs of the nutrition pillar.

Table 18: Nutrition Likely Financing, 2014-2017 (US\$ million)

	2014	2015	2016	2017	TOTAL
UNICEF – IYCF	1.6	1.6	1.6	1.6	6.4
UNICEF – CMAM*	15.0	15.0	15.0	15.0	59.8
UNICEF – Policy Support	0.8	0.8	0.8	0.8	3.2
UNICEF – Micronutrients	2.6	2.6	2.6	2.6	10.6
DFID WINNN	17.0	17.0	17.0	4.0	55.0
Federal Government	10.0	10.0	10.0	10.0	40.0
GAIN	6.5	6.5	6.5	6.5	26.0
Total	53.5	53.5	53.5	40.5	201.0

* Includes CIFF financing of \$8.6 million per year for CMAM.

⁴⁶ World Bank Costed Plan for Scaling Up Nutrition: Nigeria, 2014

Combining resource needs and likely financing projections, we arrive at the annual estimated funding gaps shown in Table 19. The \$388 million dollar gap over 4 years (2014-2017) — almost two thirds of the total funding required — is slightly below the \$446 million gap over 4 years (2012-2015) that was projected by the PDU in 2012. This is largely because while the scope and scale of the nutrition strategy in Nigeria have greatly expanded (ten interventions instead of only CMAM in the 2012 model, and pregnant and lactating women included in coverage), the coverage targets are much more realistic than in the original model. Although available funding has increased, it has done so from a low baseline compared to more established pillars like Malaria and Immunization.

On the resource needs side, the NSPAN assumes ambitious targets with annual increases in coverage that have rarely been observed in nutrition interventions on a large scale (reaching 80-100% by the end of five years for seven of the ten interventions). It is unclear whether, even if the necessary resources were mobilized, the FMOH would have the capacity to implement the programs and disburse the funds effectively at the scale and time frame suggested in NSPAN. The national nutrition program might benefit from re-examining the realism and sustainability of its targets for coverage, especially for interventions that cur-

rently have negligible coverage, such as ORS and Complementary Foods. Revising the targets would also make resource needs low and would reduce the funding gap.

On the financing side, allocating the extra \$20 million a year pledged by Nigeria at the Nutrition for Growth conference in 2013 would help to demonstrate government commitment to nutrition, but would only close a fraction of the projected funding gap (see optimistic scenario in Table 21 below). However, FMOH could devote what resources it can to fulfill as much of that commitment as possible, and this could also possibly bring in new actors to the relatively sparse donor landscape for nutrition in Nigeria.

Alternative Projections

Table 19 represents our middle-of-the-road projections for the nutrition pillar's resource needs and likely financing. To test the sensitivity of funding gaps to reasonable variations in the donor landscape, we modify likely financing to generate a pessimistic and optimistic scenario for the nutrition pillar. The results of this exercise, shown in Table 20 and Table 21, provide reasonable bounds for the funding gap.

Table 19: Medium Scenario Funding Gaps, 2014-2017 (US\$ million)

Medium Scenario	2014	2015	2016	2017	2014-2017
Total Resource Needs	38.6	113.9	185.8	251.0	589.3
Total Available Financing	53.5	53.5	53.5	40.5	201.0
Funding Gap	(14.9)*	60.4	132.3	210.5	403.2

* Note that negative funding gaps are zeroed out to reflect that financing is not fungible across time and excess funding does not necessarily carry over into following years.

Table 20: Pessimistic Scenario Funding Gaps, 2014-2017 (US\$ million)

Pessimistic Scenario	2014	2015	2016	2017	2014-2017
Total Resource Needs	38.6	113.9	185.8	251.0	589.3
Total Likely Financing	49.0	49.0	49.0	36.0	183.0
Funding Gap	(10.4)	64.9	136.8	215.0	416.7

Table 21: Optimistic Scenario Funding Gaps, 2014-2017 (US\$ million)

Optimistic Scenario	2014	2015	2016	2017	2014-2017
Total Resource Needs	38.6	113.9	185.8	251.0	589.3
Total Likely Financing	83.5	83.5	83.5	70.5	321.0
Funding Gap	(44.9)	30.4	102.3	180.5	313.2

In Table 20, we construct a scenario in which leading nutrition programs (run by UNICEF and GAIN) fall short of their projected 2013-2017 expenditure by roughly 10%.

In the optimistic scenario, we again make no changes in the resource needs, but we envision the Government of Nigeria following through on its Nutrition for Growth commitment. We assume that this would raise a further \$20 million per year in matched funding (potentially from a donor organization that also made a Nutrition for Growth pledge in June 2013). This raises the likely financing to \$321 million over the four year period, reducing the funding gap by about 25%.

Key Takeaways – Nutrition

- According to our medium scenario (derived from the World Bank-costed NSPAN), nutrition resource needs for 2014-17 are projected to be \$589 million, with expected financing of \$201 million, leaving a sizable \$403 million gap over these four years.
- The 2014 budget contains no allocation for Nutrition, despite a \$20 commitment at N4G. This sends an unfortunate signal to donors and to national advocates for nutrition in Nigeria.
- The NSPAN assumes ambitious coverage targets for some interventions with negligible current coverage (for example, reaching 80-90% in five years for ORS, micronutrient powders, and iron fortification of staples). FMOH may wish to consider more realistic targets for such interventions, and/or to prioritize the delivery of certain cost-effective interventions, such as CMAM.

PMTCT

Introduction

The PMTCT pillar aims to increase access to ANC coverage and HIV testing for pregnant women and to deliver more effective ARVs to mothers living with HIV (both as a preventive measure and as treatment to improve their own health) and their exposed infants. According to the latest available data, with adult HIV prevalence of 3.6% and annual birth cohort of over 6 million, an estimated 210,000 pregnant women (15 years or older) and 360,000 children (0-14 years) are living with HIV in Nigeria. However, coverage is low: only 14% of all pregnant women were tested for HIV, while only 11% of infants born to HIV positive mothers received ARVs for PMTCT in 2010.⁴⁷ Under SOML, the Nigeria National Scale-up Plan for PMTCT 2010-15 envisages at least 90% coverage for.⁴⁸

- HIV counseling and testing among pregnant women
- ARV prophylaxis for HIV positive pregnant women and breastfeeding infant-mother pairs
- Early infant diagnosis for all HIV-exposed infants
- Lifelong ART to pregnant women needing it for their own health (CD4 count < 350⁴⁹).

The 2013 President's Comprehensive Response Plan (PCRP) aims to accelerate movement towards these goals to meet Nigeria's commitment by 2015 to the UNGA's 2011 Political Declaration on HIV and AIDS.⁵⁰ The PCRP would need to inspire very rapid scale-up across the four areas mentioned above to reach the coverage objectives. It is therefore very important to estimate the resources needed to support PMTCT scale-up in Nigeria, current spending on PMTCT, and sources of financing for projected resource needs.

⁴⁷ UNICEF- Unite for Children, Unite against AIDS, Oct 2012. PMTCT Factsheet on Nigeria.

⁴⁸ Federal Ministry of Health: National Scale up Plan towards Elimination of Mother to Child Transmission of HIV in Nigeria. 2010-2015.

⁴⁹ Clinton Health Access Initiative PMTCT Peds Impact Model 2012

⁵⁰ President's Comprehensive Response Plan for HIV/AIDS in Nigeria, 2013.

Resource needs

The original PMTCT pillar of the SOML, which envisioned achieving 90% coverage for the above dimensions over by 2015, has become obsolete for a number of reasons: rates of scale up are behind what were envisioned in 2009 for the National Scale-up Plan 2010-15; unit costs for drugs and commodities have decreased; and the national policy on PMTCT has shifted in several respects (from Option A to Options B and B+, decentralization of services, task shifting, etc). The original costing also does not estimate the additional human resource costs associated with the entire range activities involved in scaling up PMTCT coverage. It only calculates the cost of a lab technician and training and supplies for each PHC facility. Additionally, the financing figures are out of date and do not incorporate the latest spending plans of the major donors or the Nigerian government. Finally, given the lag in coverage scale-up, the time horizon until 2015 is no longer feasible and needs to be extended to 2017 – as we have tried to do for other SOML pillars.

In order to re-estimate the resource needs for scaling up PMTCT in Nigeria, we reviewed various available costing methodologies for their completeness and reliability. These included state-level PMTCT costings, PCRPs budgets, and the CHAI model. More details about each of these models can be found in Annex I.

After reviewing the models, we chose the CHAI costing model to revise the existing PMTCT costing plans. The CHAI model is useful because it:

- Focuses on the cost of service delivery and is consistent across Nigeria (before demographic, epidemiologic, or other variations across states are incorporated),
- Draws on a national-level, bottom-up, activities-based costing approach, which is preferable to merely combining elements of disparate and differential costing exercises. This will preserve consistency in assumptions and methodology and prepare the ground for credible integration with the costing for other pillars of the SOML initiative.
- Can be modified to take into account different coverage ratios or more up-to-date unit costs.

Our approach was to use the CHAI model to forecast medium-term resource needs associated with the original coverage targets of the PMTCT scale-up plan, using more accurate labor costs and tracing and verifying the model's pricing of commodity inputs. This approach was discussed with the PDU and agreed in principle during our visit to Nigeria in November 2013.

The main modifications to the needs estimates are:

- **Human resources for health:** Our cost projections preserve CHAI's relative proportion of wages across cadres of health workers but incorporate average 2013-15 salary figures from the 2010-15 Scale-up Plan adjusted by the average 2012 USD inflation rate of 2%. This corrects the Scale-up Plan's simplifying but unrealistic assumption of a constant Naira/USD exchange rate. The estimates cover the labor cost for delivering the full course of PMTCT services to HIV-positive pregnant and breastfeeding women and exposed infants. The original HRH unit costs used in the CHAI model, shown in the attached costing spreadsheets, were undocumented in addition to being much higher than those used in the government's Scale-up Plan or those budgeted in the various state costings reviewed for this exercise. Hence, a cautious replacement with more plausible numbers from local costings appeared to be in order.
- **Time Horizon:** We extended the modified CHAI model, which only covers the 2012-16 period, to estimate costs for the 2017 population cohort. We used the CHAI population model to estimate the size of the cohort in need of PMTCT services in 2017, and then plugged that figure back in the model to estimate PMTCT program costs for that year.
- **Coverage Assumptions:** The original SOML costing assumed 90% coverage of ANC, testing, and ARV coverage for pregnant and breast-feeding women by 2015. Likewise, the PCRPs contains coverage targets that are unlikely to be met by 2015. Similarly, the original CHAI model also assumed high coverage, 95%, 85%, and 90% respectively for ANC attendance, testing, and ARV coverage under a single scenario by 2015. Since these coverage rates are no longer likely to be met by 2015 and given the extended time horizon, we used the model to estimate costs for scaling up coverage over 2012-17 in three scenarios.

The fast scale-up scenario reaches in 2017 coverage levels envisioned in the original SOML model for 2015, while the slow scenario assumes that expansion of ANC, testing, and ARV services only keeps up with growth in the population cohort, such that coverage remains at 2012 levels. The moderate scenario occupies a middle ground between these two coverage extremes. More information on coverage targets can be found in Annex II.

With these assumptions, we project the following costs over 2013-17 in the moderate coverage scenario:

Table 22: Moderate Scale-Up (US\$ million)

SOML PMTCT: Moderate Scale-Up	2013	2014	2015	2016	2017	2014-17 Total	Cost Share
Staff, Lab, & Drugs							
HRH Costs	8.0	9.9	12.1	14.5	17.3	53.8	14.2%
Lab Commodity Costs incl. distribution	8.9	11.2	13.9	16.9	20.1	62.1	16.4%
Drug Commodity Costs incl. distribution	16.9	22.1	28.3	35.7	42.7	128.8	34.1%
Subtotal	33.7	43.2	54.3	67.1	80.1	244.7	64.8%
Other Costs							
Training	21.6	27.4	27.4	27.4	27.4	109.5	29.0%
M&E	0.1	0.1	0.1	0.1	0.1	0.4	0.1%
Other Operational Costs ⁵¹	5.6	3.1	7.7	6.1	6.1	23.1	6.1%
Subtotal	27.3	30.6	35.2	33.6	33.6	133.0	35.2%
Total	61.1	73.8	89.5	100.7	113.7	377.7	100.0%

The above table shows costs for the major PMTCT program components over 2013-17. Almost two-thirds of the costs are for staff, lab, and drugs, with training the other large cost. The overall costs increase year-on-year as coverage and the size of the underlying population cohort expand. We estimate the overall PMTCT cost for 2014-17 at \$377.7 million.

Drivers of resource needs

The primary drivers of resource needs are:

- **Commodity Costs:** Lab and drug commodity costs together represent over 50% of the 2014-17 PMTCT costs. This estimate uses CHAI's May 2012 quotes for calculating drug cost by regimen for pregnant and breastfeeding HIV-positive women, and for HIV-positive women between pregnancies while not breastfeeding. Distribution cost is estimated at 20% of lab and drug costs throughout and is included in these figures.
- **Training:** These figures include training and workshops for prevention, counseling, and care for health and community workers and HIV-positive pregnant women, and community-based health interventions.
- **Human resources for health:** The model estimates human resource costs at 14.2% of total resource needs over 2014-17. This includes the services of health workers from counselors to doctors delivering the full range of PMTCT interventions.

- **M&E and other operational costs:** These estimates include centralized monitoring and evaluation costs, and other major costs like transport, communications, and a share of costs for building and refurbishment of facilities.

Major differences with the original SOML (October 2012) costing

The following table presents a comparison at a glance between the original SOML costing, the CHAI model, and our modified CHAI costing for SOML PMTCT:

Apart from the change in time horizon to 2014-17 from 2012-15, our analysis predicts a total program cost of \$377.7 million compared to the \$665.7 million outlay for SOML, causing average annual costs to drop from \$166.4 million to \$94.4 million. Specifically, compared to the 2012-15 SOML model, the modified 2014-17 CHAI model estimates:

- \$190.9 million in lab and drug commodity costs instead of \$127.8 million
- \$163.4 million in staff and training costs instead of \$358.6 million
- \$23.5 million in M&E and assorted operational costs instead of SOML's \$179.3 million in demand generation and M&E

⁵¹ Including: facilities, lab and non-lab capital expenditures, transport, supply chain strengthening, printing, community engagement, overheads, and retention and linkage intervention.

Table 23: Comparison of costs between original SOML, original CHAI, and modified CHAI models (US\$ million)

Program	SOML: 2012-15	CHAI: 2012-16	R4D Re-costing (Modified CHAI): 2014-17 ⁵²
Time Horizon (years)	4	5	4
Outlay (\$ Mil)	\$665.7	\$976.6	\$377.7
Average Annual Outlay (\$ Mil)	\$166.4	\$195.3	\$94.4

Given the adjustments referenced above, the major reductions in resource needs come from two sources: much lower coverage assumptions used in the moderate resource needs scenario and the lower HRH unit costs as described above.

Financing

We collected financing estimates for Nigeria PMTCT from major funding sources for the five years 2013-17. The following sections present overall PMTCT financing, major funding sources and methodological assumptions, and a financial gap analysis which compares best, middle, and pessimistic funding scenarios with the moderate resource needs estimate.

The assumptions for the financing scenarios are as follows:

- Global Fund, PEPFAR, Nigerian government, World Bank, and DFID are the main sources of PMTCT financing in Nigeria, as shown by the table on shares of major funders under each financing scenario below.
- Across these key sources, funding from the Global Fund, World Bank, and DfID seem fairly certain and is maintained at the same level under all three scenarios. Fund-

ing from the Nigerian government and PEPAR is varied across the scenarios to reflect the greater uncertainties about these two sources. The PEPFAR funding situation should be monitored carefully, given some recent signs that its level of contribution may decline in the future.

- In the best scenario, PEPFAR is projected to spend \$50M/year on PMTCT in Nigeria over 2014-17, in line with estimates provided to us by PEPFAR. Since in recent years, PEPFAR has only managed to disburse of 67.4% of budgeted funds, we have used this percentage in the middle and pessimistic scenarios.
- In the best case, we expect \$40M/year in PMTCT spending from the government over 2014-17 as extra-budgetary funding from the SURE-P program, which shows 8 billion naira (about \$50 million) for HIV in 2014. However, neither the overall SURE-P HIV allocation nor the fraction of these funds that will go to PMTCT are certain. In the medium scenario, we assume government spending on PMTCT from the 2009-10 NASA to continue at its estimated 2010 level of \$3.5M per year until 2017⁵³. Finally, under the pessimistic scenario, we assume that government spending will decline to just the \$425 thousand/year (68 million naira annually) shown in the 2014 health budget for training and capacity building at the PHC level.

Table 24: SOML PMTCT Financing Scenarios (US\$ million)

SOML PMTCT Financing Scenario	2013	2014	2015	2016	2017	2014-17 Total
Optimistic	61.5	130.0	107.3	109.7	107.5	454.6
Medium	61.5	77.5	54.9	57.4	55.3	245.0
Pessimistic	61.5	74.1	51.4	53.8	51.7	231.1

⁵² Under the moderate coverage scenario.

⁵³ Public/Overall AIDS spending percentage used to estimate FGoN PMTCT spending for 2010 from the NASA (inflated that by 2% dollar inflation until 2017).

The following table shows PMTCT financing in Nigeria under the three scenarios:

In the best scenario about \$454.6 million will be available over 2014-17. This high number is primarily caused by the assumed \$40M/year in GoN support. Financing under the middle and pessimistic scenarios is expected to decline to \$245M and about \$231M, respectively.

Table 25: Differences in total estimated financing in scenarios (US\$ million)

	2013	2014	2015	2016	2017	2014-17 Total
Original SOML PMTCT Financing	93.4	93.4	93.4	—	—	186.8
PEPFAR	35.0	35.0	35.0	—	—	70.0
GFATM	56.9	56.9	56.9	—	—	113.8
UNICEF	1.5	1.5	1.5	—	—	3.0
Projected Best Case Financing	61.5	130.0	107.3	109.7	107.5	454.6
Projected Medium Case Financing	61.5	77.5	54.9	57.4	55.3	245.0
Projected Pessimistic Case Financing	61.5	74.1	51.4	53.8	51.7	231.1

Table 26: Funding shares by donors in scenarios (US\$ million)

Funders		Scenarios with Total 2014-17 Financing by Source					
		Best Case		Middle Case		Pessimistic Case	
		Funding	Share	Funding	Share	Funding	Share
Global Fund*		\$63.8	14.0%	\$63.8	26.0%	\$63.8	27.6%
PEPFAR		\$200.0	44.0%	\$134.8	55.0%	\$134.8	58.3%
Nigeria Government Financing		\$160.0	35.2%	\$15.7	6.4%	\$1.7	0.7%
World Bank AIDS Project		\$16.9	3.7%	\$16.9	6.9%	\$16.9	7.3%
DFID (ENR program)		\$2.7	0.6%	\$2.7	1.1%	\$2.7	1.2%
CIFF	<i>Available funding disbursed & used in 2013 according to current information</i>	\$0.0	0.0%	\$0.0	0.0%	\$0.0	0.0%
Chevron		\$0.0	0.0%	\$0.0	0.0%	\$0.0	0.0%
Elton John Foundation		\$0.0	0.0%	\$0.0	0.0%	\$0.0	0.0%
UN Agencies	UNICEF	\$8.8	1.9%	\$8.8	3.6%	\$8.8	3.8%
	WHO	\$0.7	0.1%	\$0.7	0.3%	\$0.7	0.3%
	UNWOMEN	\$0.1	0.0%	\$0.1	0.0%	\$0.1	0.0%
	UNAIDS	\$0.5	0.1%	\$0.5	0.2%	\$0.5	0.2%
	UNFPA	\$1.0	0.2%	\$1.0	0.4%	\$1.0	0.4%
	UNOPS	\$0.1	0.0%	\$0.1	0.0%	\$0.1	0.0%
Total		\$454.6	100.0%	\$245.0	100.0%	\$231.1	100.0%

These three scenarios differ in several important ways from the original SOML financing estimates published in 2012 and covering 2012-15. Aside from the fact that the time period is shorter (four years instead of five), key differences include the following:

The original projections did not estimate financing for 2016 and 2017 and covered only three sources, with PEPFAR and GFATM providing the bulk of total funding. The original estimates also assumed a single resource scenario with steady funding from all three sources over 2012-15 (2012 not shown here).

Table 26 shows major sources by funding shares for 2014-17 Nigeria PMTCT financing across all three scenarios:

As shown, PEPFAR remains the largest funder in all scenarios, while the government goes from second place in the best case to sixth place in the pessimistic one if the SURE-P funds do not materialize.

In our moderate resource needs scenario, funds required for Nigeria's PMTCT program double over four years, from \$60 million in 2013 to nearly \$120 million by 2017. Whether there is a gap or adequate funding — or even a surplus — available to meet this projected need depends on what happens on the financing side. In the best (most optimistic) case financing scenario, resources for PMTCT rise rapidly in 2014 to \$130 million and then stabilize at just under \$110 million annually from 2015 to 2017. This is mainly due to the assumed assignment to PMTCT of most (80%) of the special SURE-P allocation for AIDS, and to better execution of the PEPFAR funding for PMTCT. With resource needs only rising gradually over the five year period, there are surplus monies for PMTCT in 2014-16, and more or less "break-even" in 2017, as illustrated by the chart below showing best case financing.

If this optimistic scenario does not materialize, however (because the SURE-P funds are not spent on PMTCT, and PEPFAR continues to experience difficulties in fully executing its PMTCT budgets), the PMTCT program will likely experience significant funding shortfalls from 2015 onward. Under the middle financing scenario, the cumulative resource shortfall amounts to \$132.7 million. Under the pessimistic financing scenario, the shortfall widens to \$146.7 million over the five-year period. In these cases, the Government will have to boost its domestic contribution to PMTCT and/or persuade external funders to expand and more fully utilize their support to Nigeria. If not, Nigeria will only be able to cover around 60%-65% of its total PMTCT financing needs, leading to a serious disruption of the program.

Key Takeaways — PMTCT

- The prevention of mother to child transmission remains a huge problem for Nigeria. Even though adult prevalence is only 4%, around 250,000 HIV positive pregnant women give birth each year, putting their babies at risk of infection.
- Our analysis suggests that the funding needed for PMTCT over the four year period 2014-17 amounts to \$378 million or \$94 million a year. This is only 56% of the \$166 million annual price tag proposed when SOML was launched in 2012-15, in part because the coverage targets that Nigeria can realistically achieve are considerably lower than in the original SOML budget, in part because the likely unit costs for drugs and salaries are also less than assumed previously.
- The expected available funding for PMTCT over the next four years is difficult to predict. Under the most optimistic scenario, Nigeria's PMTCT financing needs will largely be met by the Government, PEPFAR, and the Global Fund. Under the most pessimistic financing scenario, there will be a large gap of \$147 million or about 40% of the total funding requirement for PMTCT.
- To prevent mother to child transmission comprehensively, the Government must at minimum ensure that the modest PMTCT program modeled in this paper, based on lower expected coverage levels, is fully funded. This will require that the Government deliver on its verbal commitment to a major increase in domestic public financing for AIDS including PMTCT (reported to be about \$40 million annually from the SURE-P Fund).
- At the same time the Government will need to lock in and ensure the effective disbursement and spending of the planned contributions from PEPFAR (recent signs suggest that its level of funding may decline) and the Global Fund. The sustained flow of these latter donor sources will in turn depend on clear and monitorable signals of Government financial commitment and good performance in the implementation of its PMTCT program.

Chapter IV: Bringing Together All the Pillars

Drawing from the preceding pillar analyses, in this chapter we aggregate the total resource requirements and likely funding for SOML and highlight funding gaps across three scenarios. We then explore how much of the funding gap might be met from increased domestic financing under different assumptions.

Resource Requirements for SOML

Integrated SOML resource requirements are presented in Table 27. Although they were included in the original SOML costings, and are discussed in the immunization section, polio eradication resource requirements are excluded in this exercise, for several reasons. Resource requirements for polio eradication will depend on the trajectory of the global and regional polio eradication efforts and funding is managed by the Global Polio Eradication Initiative. There is high

global commitment to the polio eradication “endgame” and funding is likely to be made available on a rolling basis for Nigeria’s requirements. Including polio eradication resource requirements — and now-outdated information on likely funding — in the aggregate costing would give an exaggerated and misleading sense of the funding shortfall.

Because two of six pillars do not extend beyond 2015, relative size of resource needs is best calculated using single year comparisons, rather than comparisons over the four-year span. Malaria has the largest resource requirement in 2014 (41%), followed by immunization (25%), essential medicines (13%), MCH (11%, PMTCT (7%) and Nutrition (4%). In total, resource requirements are US\$1.08 billion in 2014, the equivalent of US \$6.37 per capita or nearly two-thirds of the entire FMOH 2014 proposed budget. They increase in 2015 to US\$1.30 billion, or US\$7.70 per capita. If Essential Medicines and Immunization figures were available for 2016 and 2017, total funding needs for SOML would likely total around \$5 billion over the four years period.

Table 27: Resource requirements (US\$ million)

Resource Needs	2014	2015	2016	2017	2014-2017
Essential Medicines	138.5	139.6	n/a	n/a	278.1
Immunization	266.5	362.1	n/a	n/a	628.6
Maternal-Child Health	119.6	154.6	170.7	191.8	636.6
Malaria	438.8	439.4	342.9	360.0	1,581.0
Nutrition	38.6	113.9	185.8	251.0	589.3
PMTCT	73.8	89.5	100.7	113.7	377.7
Total	1,075.8	1,299.0	800.0*	916.5*	4,091.4*
Resource Requirements US\$/p.c.	\$6.37	\$7.70	N.A.	N.A.	N.A.

*Does not include Essential Medicines and Immunization in 2016-17

Table 28: Likely Financing as Percent of Requirements, Pessimistic to Optimistic Scenarios, by Pillar, 2014-17 (US\$ million)

Range of Likely Financing as Percent of Requirements					
	2014	2015	2016	2017	2014-2017
Essential Medicines	75%	54%	N.A.	N.A.	64%
Immunization	49-56%	59-67%	N.A.	N.A.	55%-62%
Maternal-Child Health	80%	62-110%	0-44%	0-39%	30%-65%
Malaria	82-100%	51-75%	57-100%	54-98%	62%-93%
Nutrition	100%	43-73%	26-45%	14-28%	29%-47%
PMTCT	100%	57-100%	53-100%	45-95%	61%-98%

Likely Financing

The pillars differ widely in projected financing under different scenarios. As would be expected, financing is more uncertain in later years and the fraction of resource needs covered therefore falls (Table 28). Malaria and PMTCT are projected to have the largest percentage of resource requirements covered in 2014 (at close to 100%), followed by MCH, nutrition, and immunization. Over the four years, Nutrition has

the lowest share of likely financing compared to requirements, at only 32%. Nutrition is a new program with a national strategic plan that is just being finalized at the time of writing, and the “donor architecture” is not well established, in contrast to, for example, malaria or immunization.

We now turn to the financing prospects and funding gaps of the entire SOML initiative by aggregating our pillar-specific scenarios. Table 29 shows the breakdown of total likely

Table 29: SOML Likely Financing by type of source (US\$ million)

Source	Contribution in US\$ millions	Percentage of total likely financing
Domestic	610	24%
Multilateral	1,316	51%
Bilateral	595	23%
Private Foundations	63	2%
Total	2,583	100%

Table 30: SOML Funding Gaps by Pillar and Total (US\$ million)

Pessimistic estimates	2014	2015	2016	2017	2014-17
Essential Medicines	35.3	64.2	n/a	n/a	99.4
Immunization	136.7	148.2	n/a	n/a	284.9
Maternal Child Health	24.3	59.3	170.7	191.8	446.1
Malaria	77.5	214.5	147.8	164.9	604.6
Nutrition	0.0*	64.9	136.8	215.0	416.7
PMTCT	0.0*	38.1	46.9	62.0	147.0
Total	273.8	589.1	502.1	633.7	1,998.8
Medium estimates	2014	2015	2016	2017	2014-17
Essential Medicines	35.3	64.2	n/a	n/a	99.4
Immunization	116.7	123.2	n/a	n/a	239.9
Maternal Child Health	24.3	59.3	95.7	116.8	296.1
Malaria	0.0*	135.8	109.4	126.5	371.7
Nutrition	0.0*	60.4	132.3	210.5	403.2
PMTCT	0.0*	34.6	43.3	58.4	136.4
Total	176.3	477.5	380.7	512.2	1,546.7
Optimistic estimates	2014	2015	2016	2017	2014-17
Essential Medicines	35.3	64.2	n/a	n/a	99.4
Immunization	116.7	118.2	n/a	n/a	234.9
Maternal Child Health	24.3	34.3	70.7	91.8	221.1
Malaria	0.0*	110.1	0.0	5.6	115.7
Nutrition	0.0*	30.4	102.3	180.5	313.2
PMTCT	0.0*	0.0*	0.0*	6.2	6.2
Total	176.3	357.2	173.0	284.1	990.5

*Note that negative funding gaps have been zeroed out, under the assumption that financing is not fungible over time or among pillars.

financing by source, revealing that multilateral institutions contribute more than half of all likely funding, while Table 30 aggregates pillar funding gaps to provide a complete picture of SOML's expected funding gaps for 2014-2017.

In absolute terms, the funding gap for SOML ranges from \$2.0 billion, under the pessimistic scenario, to \$1.0 billion for the optimistic scenario for 2014-17 (note that immunization and essential medicines do not have estimates for 2016 and 2017, so the true total is actually higher). In the medium scenario, the total funding gap is \$1.5 billion. In summary, we project that 37% of SOML's roughly \$4 billion in resource needs will be unmet, assuming that program targets are achieved, with the gap ranging from \$1.0 billion to \$2.0 billion. In other words, the requirements for SOML over the four year period are twice the entire domestic budget of the Federal Health Ministry, and the projected four year shortfall is more or less the size of the current FMOH budget.

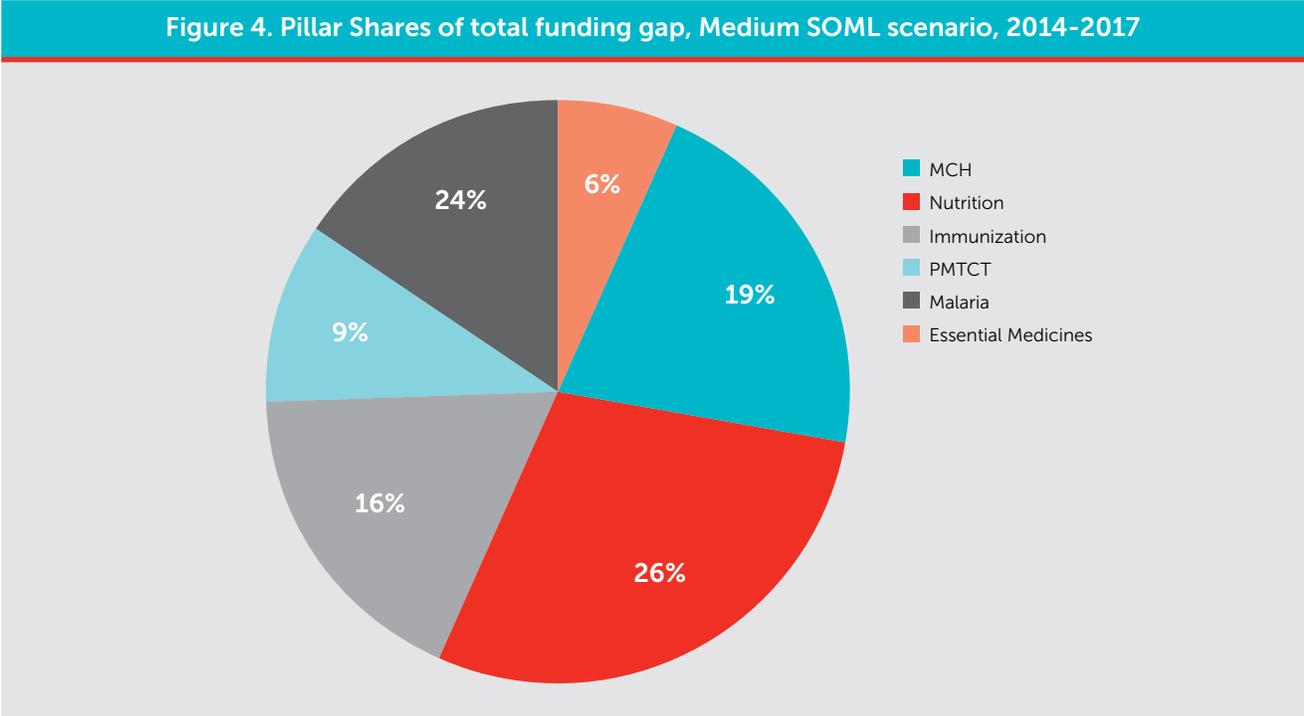
The largest contributor to the total funding gap in the optimistic and middle scenarios is Nutrition (26% of the 2014-2017 funding gap). Essential Medicines has the smallest projected funding gap, followed by PMTCT (for which the funding gap nearly disappears entirely in the optimistic scenario), reflecting the more realistic coverage targets that we adopted in our analysis and the strong response of certain key donors, and possibly the government, to the call for more investment in preventing the transmission of HIV from infected mothers to their infants. The pillars' percentage contributions to the total funding gap are similar under the all three projections (Figure 4).

SOML funding is heavily dependent on external existence. Domestic sources of financing cover only 24% of total projected funding, with external donors financing the remaining 76% for the years 2014-17. Moreover, external support is concentrated among a few key donors with the Global Fund, the US government, and GAVI accounting for 58% of the total committed and projected funding envelope.

Scope for Greater Allocation of Public Funding to Health in Nigeria

In the pillar analyses, we discuss pillar-specific strategies for reducing the funding gaps, either by raising more funding or maximizing the impact of SOML activities with limited resources. But to what extent can the SOML-wide funding gap be bridged by allocating more public funding to the initiative? In the proposed 2014 federal budget, 5.7% of the total allocation is for health. This is fairly low – even accounting for additional spending at the state and LGA level, WHO estimates health spending at 6.7% of total government spending, well below the Abuja targets of 15%. In contrast, Ghana, which has a similar level of GNI per capita, devotes about 12% of government spending to health. Lesotho, with a slightly lower level of GNI per capita, devotes 15%.⁵⁴

Figure 4. Pillar Shares of total funding gap, Medium SOML scenario, 2014-2017



⁵⁴ WHO NHA estimates

In per capita terms, the SOML funding gaps are equivalent to \$1.04 in 2014 and \$2.82 in 2015. Closing those gaps would require significant additional public expenditure for health in Nigeria. According to our calculations based on IMF and WHO data, Nigeria's per capita general government (federal, state, and LGA) spending for health in 2014 is projected to be about \$32 per capita. Therefore, the outstanding needs for SOML represent in 2014 a 3% increase over projected public health spending in 2014 and a 9% increase in 2015. When compared to federal spending on health alone (that is, the regular FMOH budget and the SURE-P share for health), the increase is much larger, at 11% in 2014, rising to about 31% in 2015.

Table 31 presents some scenarios on how much additional funding for SOML might be raised by changes in the share of federal budget devoted to health generally and to SOML specifically, assuming that the federal budget remains at its 2014 level through 2017.

Status Quo: Health share of federal government expenditure remains at 5.7%

Scenario 1: Stronger Commitment to Health: Health share of federal government expenditure increases by 0.4 percentage points per year — 15% of this increase is allocated to SOML.

Scenario 2: Stronger Commitment to Health and SOML: same as above in terms of health share of federal government expenditure (5.7% in 2014 to 6.9% in 2017); 33% of the increase is allocated to SOML.

Scenario 3: Stronger Commitment to Health and SOML and reallocation from tertiary hospitals: same as above in terms of health share and 33% of increase in health resources directed to SOML; in addition, 5% of FMOH allocation to tertiary hospitals redirected to SOML.

Table 31: Three alternative trajectories for federal health expenditures 2014-17, (US\$ million)

Strategy	2014	2015	2016	2017	2014-2017
Status Quo					
General Government Expenditure	29,019	29,019	29,019	29,019	
General Government Expenditure on Health	1,642	1,642	1,642	1,642	
Additional Resources for SOML over status quo	0	0	0	0	0
Scenario 1					
General Government Expenditure	29,019	29,019	29,019	29,019	
General Government Expenditure on Health	1,642	1,770	1,886	2,002	
Additional Resources for SOML over status quo	0	19	37	54	110
Scenario 2					
General Government Expenditure	29,019	29,019	29,019	29,019	
General Government Expenditure on Health	1,642	1,770	1,886	2,002	
Additional Resources for SOML over status quo	0	42	81	119	242
Scenario 3					
General Government Expenditure	29,019	29,019	29,019	29,019	
General Government Expenditure on Health	1,642	1,770	1,886	2,002	
Additional Resources for SOML over status quo	0	87	126	164	377

In the “Stronger Commitment to Health” scenario (Scenario 1), an additional \$110 million would be available to SOML from 2015-17. In the “Stronger Commitment to Health and SOML” scenario (Scenario 2) an additional \$242 million could be raised for SOML, corresponding to about one-sixth of the funding gap under the medium SOML scenario. The third scenario builds on the second scenario, but also for illustrative purposes reallocates 5% of the FMOH budget for specialized hospitals to SOML in 2015, 2016, and 2017, generating an additional \$45 million per year for SOML. These changes would generate an additional \$377 million for SOML from 2015-17 and meet about one quarter of the funding gap. Many other scenarios could be created, but it is difficult to imagine a funding scenario that could completely close the funding gap from domestic resources — more donor resources will be needed, or the SOML initiative will need to be prioritized or phased differently.

Conclusion

Our cross-cutting scenarios for the SOML program suggest that only 63% of the SOML program is currently likely to be funded for 2014-2017. The outstanding resource needs — between \$1.0 and \$2.0 billion — represent a large increase over Nigeria’s current public health expenditure. However, our analysis of government spending suggests that a significant portion of the expected SOML funding gap — perhaps one quarter — could be closed by a modest increase in the share of government spending going to health and some reallocation within the health sector, from other uses to the highly cost-effective SOML interventions. Such a demonstration of government commitment could send a positive signal to donors and potentially unlock greater funding for SOML from other sources. Through a combination of prioritizing high-impact interventions within the SOML initiative (explained in more detail in the next chapter) and increasing government commitment to health in general (and SOML programs in particular), SOML may be able to go further along the path to achieving its goal of saving one million lives.

Chapter V: Discussion of Findings

Summary of findings from cost and financing analysis

Our analysis suggests that it would cost about US\$4.1 billion to fully implement all SOML activities through 2017, while our best estimate is that US\$2.6 billion in financing for these activities is either committed or likely to come in during this period. Thus we project a substantial funding gap for SOML of \$1.5 billion, or 37% of what is required, over the four years. These estimates are subject to many uncertainties, but our analysis of alternative scenarios suggests that the gap will almost certainly remain large. In the best case, it could be as little as US\$1.0 billion; in the worst case it could reach \$2.0 billion.

The different SOML pillars face dramatically different funding situations. Our best estimate of the funding gap as a percentage of resource needs from 2014-2017 ranges from 22% for Malaria to 68% for Nutrition.

For some pillars, resource needs estimates have been reduced to reflect more realistic targets for coverage (e.g., PMTCT, MCH). For others, resource needs projections have increased due to the inclusion of additional interventions (e.g. Nutrition, Essential Medicines). Across all pillars, estimates of likely financing are higher for 2014-15 than in the original PDU analysis because we have been able to include more recently committed funding numbers than were available in 2012.

Almost all funding for SOML activities is earmarked to some degree, to a disease area and often to specific interventions. For example, the Global Fund's resources are limited to the three diseases it was set up to control, and thus can only go to malaria and PMTCT under SOML. Within a pillar like nutrition, all of CIFF's US\$10.6 million per year contribution, which accounts for over 50% of projected donor funding for nutrition, is dedicated to CMAM. Such earmarking may help to keep funding focused on high impact activities, but also limits the degree to which money can be moved from one activity to another in the event that there is not enough to fund all interventions fully (see discussion of prioritization below). Over the medium term there is somewhat more flexibility: government budgets can be adjusted and new agreements with donors negotiated to reflect revised priorities. With the new funding model, the Global Fund, an important funder of PMTCT and malaria control, will give recipient countries greater flexibility in deciding how to spend their allocations. But the ability to move money from one pillar to another will still be constrained, as many important donors support only one pillar or use different channels to

support different disease areas. GAVI for immunization, PEP-FAR for HIV, and CIFF for nutrition are examples of donors that support only one SOML pillar.

As mentioned in Chapter IV, 76% of committed and likely funding for SOML for 2014-2017 comes from external sources — bilateral and multilateral donors and international foundations — and only about 24% from domestic sources, primarily the federal ministry of health and the SURE-P special fund. This analysis probably undervalues the contribution to SOML from routine state and LGA expenditures on the health system, which are not well captured in pillar costings; this is because there is little information on state and LGA health spending. Nonetheless, the small domestic contribution to SOML financing, and poor or uncertain prospects for growth in this contribution, may undermine the government's image as being highly committed to the initiative. Some important areas, including malaria, are almost entirely funded by donors, while public pledges of government funding for others (nutrition) have so far gone unfulfilled.

We have attempted to estimate funding needs and likely financing for most pillars through 2017, as the planned scale-up of many interventions will not be complete in 2015 and, in any case, sustaining these services will require on-going expenditure. Indeed, most of the needed funding for SOML is for recurrent expenditures, particularly commodities and health worker salaries. For the MCH pillar, for example, two-thirds of expenditure in 2014 is projected to be recurring, and this fraction rises through 2017 as the number of new PHC facilities constructed falls and new staff have to be paid each year. Our analysis suggests that the funding gap for SOML interventions continues to grow in these outer years, from US\$176 million in 2014 to US\$512 million in 2017. While some pillars enjoy relatively long-term funding consistent with long-term needs, for others no such structure is in place. The implications of this observation are discussed below.

Options for additional financing

Domestic financing

Prospects for increased domestic funding for SOML are not currently encouraging, but domestic levers for closing the gap do exist. We consider four sources of public-sector financing: the FMOH budget, SURE-P, the MDG fund, and state and local governments.

The overall fiscal picture for the Nigerian government, which, as explained in Chapter I depends heavily on oil

revenues, is not particularly promising. The IMF projects that FGoN revenues will remain fairly flat, in real terms, from 2014 to 2018, according to its most recent forecast.⁵⁵

Even with a fixed federal budget, health spending could grow if its share of the budget were increased, as explained in Chapter IV. While the proposed 2014 budget for MoH is actually 6% lower than the 2013 budget in nominal terms, the scenarios presented in Chapter IV suggest that modest increases in the health budget in future years could substantially decrease the funding gap. Of course, we assume that the budget increments are directed to SOML activities, whereas in reality there will be competition with other health areas (e.g., hospitals, chronic diseases, etc).

SOML funding could also be increased by reallocating some money from other uses of the government budget toward SOML activities, which were chosen in part for because they promise exceptional value for money. The 2014 budget does not suggest that such a reallocation is contemplated. For example, spending on immunization is projected to decline substantially, while spending on specialized hospitals in 2014 represents 54% of the budget.

The second most important source of spending on SOML at the federal level is the SURE-P fund, which is described in some detail chapter II. In 2013, US\$100 million, or 6% of the SURE-P budget was devoted to rehabilitation and increased staffing of health facilities through the SURE-P MCH program; this constitutes the main federal initiative falling under the SOML MCH pillar. Preliminary information on 2014 health expenditures from the SURE-P offers a mixed picture. Spending on the MCH program will apparently be reduced dramatically, by more than 28% to US\$75 million, essentially guaranteeing that the target of upgrading 5000 facilities by the end of the 2015 will not be reached. On the other hand, the 2014 SURE-P budget includes US\$49 million for HIV, representing an initial step towards fulfillment of President Jonathan's commitment to eliminate HIV/AIDS by 2030. The draft budget also includes US\$41 million in polio eradication funding. In total, health spending from SURE-P will apparently increase by US\$64 million, or 63%, over 2013 spending. The fate of health in the SURE-P budget in 2015 — and of SURE-P as a whole after 2015 — remain unclear, and will no doubt be influenced by the outcome of the 2015 elections.

Additionally, the MDG fund (also described in Chapter II), which is slated to come to an end in 2015, allocated US\$ 90 million — or 12% of the total MDG budget — for federal

health spending in the 2014 appropriations bill. The end of the MDG fund means that fiscal space for health will be further constrained after 2015.

State and local budgets are another source of possible funding for SOML, as total spending by these levels of governments reportedly rivals or exceeds that of the federal government. But most state budgets are dependent on their constitutionally mandated allocations of oil revenues from the Federation Account, which are not expected to increase rapidly. In addition, there is seemingly little overlap between SOML cost drivers and what is paid for by states and LGAs. A few states, including Lagos, have significant and growing revenues from other sources and could increase their spending on health and on SOML activities specifically. There is very little reliable information on health spending by states, and even less on trends in spending.

The private sector is another underutilized but potentially important source of additional SOML funding. Encouragingly, the Private Sector Health Alliance, a collation of private sector actors aiming to accelerate progress towards MDG goals 4,5 and 6, plans to inject new capital to SOML activities. Thus far, over \$41 million USD has been mobilized by the Alliance, which will go towards the purchase of life-saving commodities such as ORS, Zinc, and RUTF and to support critical interventions such as routine immunization.

Finally, health insurance could be another source of financing, especially if SOML activities are included in the benefits package covered by such health insurance. The National Health Insurance Scheme (NHIS) currently covers only a small fraction of the population, 3%,⁵⁶ but the new health bill aims to increase coverage of children and pregnant woman. It would provide a basic minimum package of health services to citizens in eligible primary/ or secondary health care facilities through the NHIS (with additional amounts possibly going to essential vaccines and consumables for eligible primary healthcare facilities, the provision and maintenance of facilities, equipment and transport for PHC facilities and the development of human resources for PHC).⁵⁷

International financing

Prospects for increased funding from external sources for Nigeria are uncertain. Donor assistance for health globally has been growing overall (with a dip in 2012).⁵⁸ Overall, as the main bilateral donors have struggled with slow growth and fiscal deficits, the commitment to external assistance to health has been solid. The largest bilateral donor, the US,

⁵⁵ MF, World Economic Outlook, October 2013

⁵⁶ <http://jointlearningnetwork.org/content/national-health-insurance-system> (accessed March 21, 2014).

⁵⁷ <http://www.hanshep.org/news-and-events/nigeria-passes-national-health-bill-2014>

⁵⁸ http://issuu.com/ihme/docs/ihme_fgh2013_full_report/19?e=2626063/7326995

has so far been able to maintain its spending on its signature HIV and malaria programs, but there are diminished chances for further growth. The Global Fund, the most important funder of the Nigerian malaria control program and the second largest external funder of PMTCT, will announce its envelope for Nigeria for 2015-2017 soon — early indications suggest the funding gap for Malaria and PMTCT will be reduced as a result. Overall PEPFAR funding for Nigeria has remained at around \$500 million annually, with about 10% of this amount slated for PMTCT, but actual spending on PMTCT has been lower (around \$35 million annually) because of implementation bottlenecks, and it is unclear whether the US Government will maintain the current overall level of its AIDS support for Nigeria, given the likelihood that the Nigerian Government will not be able to meet its commitments to large increases in domestic financing as spelled out in the 2010 Partnership Framework Implementation Plan between the two countries. GAVI, the most important funder of routine immunization in Nigeria, is well resourced, and Nigeria can in principle apply for additional vaccines, including the rotavirus and HPV vaccines, if it can manage to increase its DTP3 coverage up to GAVI's required 70%. Nigeria is also expected to apply for a new round of funding through GAVI's Health Sector Strengthening window. GAVI funding through this window includes performance incentives, so Nigeria can access additional funds by showing progress in improving coverage. However, given the recent rebasing exercise that led to a significant increase in the GDP estimate, Nigeria now faces the prospect of becoming ineligible for GAVI support.

It is also possible that new funding will come in, including from new donors, for some of the areas of SOML that are attracting renewed interest after a long period of neglect, particularly nutrition and reproductive and maternal health — but at present we are not aware of any new agreements which are about to be reached between Nigerian and such donors.

Other options for closing the gap

More realistic coverage targets

Although in our cost analysis we have adjusted coverage targets in some areas, notably PMTCT, many of the other SOML targets remain very ambitious. Even if sufficient resources become available, other constraints, such as lack of necessary staff, administrative bottlenecks, and weak demand, will make it challenging to scale up services as rapidly as hoped. It may be worth considering an alternative set of more realistic coverage targets for the SOML interventions, based on what can plausibly be achieved in the remaining two years, rather than on what would be necessary to reach the original goals of the initiative. Such a revision would in effect reduce the financing gap in the short run, although the costs of achieving and sustaining high coverage would in most cases arise in later years,

where such funding requirements would still have to be addressed. Lower coverage would of course also mean less impact. The point is not to expand more slowly but to bring the cost analysis more into line with what can realistically be achieved.

Creating efficiencies

Efficiency improvements could be another source of fiscal space for SOML. While there are surely gains to be had from more efficient use of human resources, better procurement practices, and increased accountability, as well as from schemes that link financing to performance, it is difficult to estimate the scope for savings from such measures. However, it could make sense to have joint government-donor teams conduct a value for money audit of each of the pillar areas, especially the ones where substantial services are already being delivered (malaria, MCH, immunization, and PMTCT), and identify ways in which greater efficiencies could be introduced. The World Bank has launched an ambitious experiment in results-based financing of primary healthcare improvements in three Nigerian states, and this project could be another avenue for testing and evaluating the use of incentives for providers and consumers to raise the performance and efficiency of SOML service delivery.

Prioritization

If the funding gap for SOML cannot be closed, some interventions will not be fully funded and some of the initiative's hoped-for impact will be lost. But decisions about how available funding is used could make a big difference in determining how far SOML could still go to accomplish most of its impact, by allocating resources where they will have the greatest impact. Broadly speaking, prioritization could happen at three levels.

- **Across pillars:** If all pillars cannot be fully funded, resources could be preferentially allocated to those with the highest cost-effectiveness or those with the largest funding gaps. Two such candidates may be the nutrition and MCH pillars, the former because of its very high cost-effectiveness and sizeable funding gap and the latter given its importance for the delivery of several critical SOML interventions, as well as its funding shortfall. This level of prioritization may be the most difficult, however, as most of the funding for SOML is earmarked to specific pillars, and reallocation could be politically challenging as well.
- **Across interventions:** Choices can also be made across interventions within the SOML pillars. This can take the form of lowering coverage targets for some, relatively less cost-effective interventions and directing them to more cost-effective interventions (for example, towards CMAM and micronutrient supplementation in the nutrition pillar). In some cases, this can reflect a recognition

of operational constraints that would have been difficult to overcome even with full funding.

- **Geographic:** Where there is not enough money to reach high coverage everywhere, scale-up should begin where particular intervention will have the greatest impact, either because need is greatest or because infrastructure is in place to effectively deliver the service. Some SOML interventions are already focused on particular parts of the country. Polio eradication spending is primarily in the North, and PMTCT financing is geographically targeted to areas with the highest HIV/AIDS burden. Focusing on these high burden, high impact, strong cost-effectiveness targeting strategies would be another way to get the most out of the limited money available for SOML pillars

Models such as the Lives Saved Tool (LiST), which has already been used to estimate the total impact of SOML, can be a powerful way to analyze the potential impact of different allocation choices. This tool could continue to be used by the PDU to provide analytical support to pillar-specific decision-making bodies.

SOML impact

The SOML derives its name from the assertion, based on the LiST model, that scaling up the health services covered by the initiative could save a million lives by the end of 2015. Many things have changed since this calculation was made: the set of included interventions has evolved, coverage targets have been modified, and scale-up has in many cases lagged. We have not attempted to recalculate impact in light of these changes or to compare the numbers of lives saved in different scenarios. But several points are clear. First, delays in scaling up SOML services are the greatest threat to saving the lives that were projected to accrue by 2015. The original coverage targets were very ambitious, and scale-up is behind schedule in most cases. For example, the SURE-P MCH program hoped to upgrade 3,500 health facilities by the end of 2013, but it has completed no more than 1,200. Pneumococcal vaccine introduction has been delayed, due to global supply shortages. PMTCT coverage is well behind the original targets. It is worth noting that financing is not the only or necessarily the most important constraint to scale-up — it cannot be taken for granted that available funds will be fully spent. But the large funding gap will eventually block the attainment of SOML's goals, if not in 2015 then in subsequent years.

Second, some interventions have been added to SOML since the original impact calculations. In particular, the scope of the nutrition pillar has been greatly expanded from its original focus on Community Management of Acute Malnutrition, with the addition of Vitamin A, Deworming, Complementary Feeding, Iron Folate and Zinc/ORS; while essential medicines has been broadened

beyond the child health component focused on diarrhea and pneumonia to include reproductive and maternal health and neonatal health components. Thus in these areas there is a potential to save more lives than originally forecasted, although only if the pace of implementation is stepped up.

Third, even if all targets are not reached, it matters very much where effort and resources are focused in the time remaining to the initiative, as scale-up of some services will yield a richer reward in lives saved than others. As such, there may be value in re-estimating the estimated number of lives that may be saved, based on these changes.

Other important messages

Funding for SOML interventions must be sustained

Although SOML is framed as an initiative to accelerate progress toward the MDGs in 2015, failure to plan for the longer term would almost certainly mean that many of the gains achieved by this deadline — now less than two years away — would be lost soon thereafter. Some of the costs including in this analysis can be considered scale-up or one-time costs, such as improvements to the vaccine cold chain, technical support to local manufacturers of essential medicines, and training of existing healthcare workers in the use of implantable contraceptives and in screening, counseling, and managing treatment for HIV positive pregnant women. But the great majority of SOML costs are recurrent, reflecting ongoing activities and commodities that will need to be replenished continuously. For example, expendable or short-lived commodities — drugs, diagnostic kits, and bednets — dominate the cost of malaria control. Successful distribution and use of bednets should reduce incidence, but the nets will nonetheless have to be replaced every three years or so, or malaria will resurge. Reduced incidence may mean less need for drugs, but every child with a fever will still have to be tested for malaria. Similarly, each new vaccine introduced into Nigeria's routine immunization program constitutes a commitment to provide the vaccine to each new cohort of infants; while vaccine prices may fall over time, Nigeria must also plan for the phasing out of GAVI support.

Thus, maintaining the gains from SOML after 2015 will almost certainly require continuing expenditures on a par with those mapped for the next two years, all the more so because some of the scale-up activities originally planned for this period will probably still be under way. Therefore a high priority should be to work toward a sustainable financing architecture (ideally with significant financing coming from domestic sources) for the activities covered in the initiative, even if the SOML rubric itself is allowed to expire at the end of 2015. Such an architecture is already

partly in place for some of the long-standing pillars, which have established donors. In particular, malaria and PMTCT can probably count on substantial funding from the Global Fund and the US government, while immunization can draw on GAVI grants, at least for a few more years. Even these sources of financing are far from certain, as funding for US government programs must be reallocated every year and GF and GAVI grants depend on the success of periodic global replenishments as well as on proposal quality and grant performance. Moreover, some important activities within these pillars, such as the private-sector case management subsidies begun under the Affordable Medicines Facility for Malaria, currently depend on ad hoc, short-term sources of funding.

The future for the remaining pillars, however, is far less clear. The activities planned under essential medicines, many of which are new, depend on assembling an ad hoc coalition of donors, many of whom may be reluctant to commit to multi-year support. The nutrition pillar also lacks an established structure for long-term international or domestic financing, although the new Catalytic Fund for Scaling Up Nutrition could become such a structure, if it is well-funded and if Nigeria is eligible. Perhaps most concerning, funding for the MCH component, which also constitutes SOML's main effort to strengthen healthcare delivery, is wholly dependent on two domestic sources, the MDG fund and SURE-P, that are currently slated to end in 2015. Although these programs to upgrade health centers involve some capital expenditures, they have also covered the salaries of new staff; the improvements will surely fade without continued funding.

Importance of strengthening the health system

The weakness of the overall health system in Nigeria is probably the most important obstacle to increasing coverage of many of the SOML interventions, especially among the poor and in the North. Most of the 23,000 frontline Primary Health Care (PHC) facilities often lack skilled practitioners, and a large percentage of the facilities do not have basic pharmaceuticals and commodities consistently in-stock. Not surprisingly, more than 50% of the households are dissatisfied with the services in public facilities and use them infrequently.⁵⁹ In fact, a recent survey found that the average Nigerian government health facility was visited by no more than 1.5 patients per day, the lowest rate of utilization of any of the six countries included in the study⁶⁰. The formal and informal health sectors fill some of this gap, but they are poorly regulated and out-of-pocket costs are a barrier to access.

Some interventions depend more on functioning health services than others. As Nigeria's recent experience has shown, bednet coverage can be increased quickly through mass campaigns. But malaria diagnosis and treatment requires trained providers and reliable supplies of test kits and drugs. Similarly, some vaccines can be delivered through campaigns, but high coverage of a full set of childhood vaccines cannot be sustained without functioning primary health services. Other SOML priorities, particularly reductions in maternal mortality and PMTCT, depend to an even greater extent on strengthening the health system.

The limited role of the federal government in delivering health services constitutes an important constraint to addressing these weaknesses in the health system, as the primary and secondary levels of the system are the responsibility of local and state governments. Bringing on board all of the States and LGAs will be challenging. Nonetheless, the SOML initiative includes at least three kinds of efforts to strengthen health service delivery.

First, using MDG and SURE-P funds, the federal government is rehabilitating primary health facilities and adding midwives and other trained staff. Although the number of facilities being upgraded is a relatively small fraction of the total, it is hoped that these efforts will serve as models. Second, there are efforts under way to strengthen various cross-cutting elements of the system, including commodity supply chains and health information systems. Efforts of this kind are included in several pillars, including essential medicines; the SOML PDU was also meant to play a role in these activities. Finally, the PDU plans to track progress toward on SOML indicators at the state level and publicize results through state "scorecards", with the goal of spurring competition among states to improve performance. These efforts are laudable and should be supported and monitored closely to see how effective they are. At the same time, the influence of the central government will remain limited, and further progress will depend on commitment and action at the state level. Many donors are now working directly with state governments.

Another crucial feature of the Nigerian health system is the importance of the private sector in treatment-seeking and service delivery. On one hand, this constitutes a major obstacle to improving healthcare, as many people seek care from village drug suppliers (PPMVs) and other untrained providers, and the private sector as a whole is poorly regulated. On the other hand, there are opportunities to make use of the private sector to deliver some SOML interventions, through partnerships with the formal private sector and through innovative use of drug shops to increase ac-

⁵⁹ <http://www.sdindicators.org/countries> (forthcoming)

⁶⁰ <http://www.sdindicators.org/countries/>

cess to certain life-saving commodities. For example, the AMFm program, now funded only through 2014, makes subsidized ACTs available through PPMVs, while the essential medicines scale-up plan envisions promotion of locally produced ORT and zinc for diarrhea through private-sector distribution channels. In PMTCT, some states such as Nasarawa are trying to contract with NGO and other private providers to expand coverage of the screening, counseling, and prophylaxis activities needed to stop HIV transmission from infected mothers to babies. In nutrition, CMAM is also being implemented by non-government organizations in some of the Northern States. These initiatives may also

prove to be powerful ways to reach more mothers and children over the next few years, bringing Nigeria closer to achieving its SOML targets for saving lives.

Summary of Key Recommendations

In order to realize the potential of SOML, it is recommended that the following actions be explored:

For FMoF

- Propose an increase in the share of the Federal budget allocated to health from 5.7% in 2014 to at least 6.9% in 2015 — and incorporate in the MTEF further planned rises to at least 6.9% by 2017 (the average for lower middle income countries is 8.8%).
- Allocate additional special funding from SURE-P to the most critical SOML priorities, at least meeting Nigeria's international pledges (beyond the current allocations for MCH, polio, and AIDS) — to include government funds for nutrition, family planning supplies, and essential MCH commodities.

For FMoH

- Work with development partners to establish a more predictable financing architecture in areas such as nutrition, reproductive and maternal health, and essential medicines.
- Develop a priority list of investments within the SOML portfolio, based on clear and evidence-based criteria, such as cost-effectiveness and need. This should include priorities across the pillars and within each pillar — the latter especially.
- Set norms and negotiate arrangements with states to pick up recurrent costs of facilities upgraded under SURE-P and MSS.
- Explore implications of re-basing of Nigeria's GNP for certain sources of external financing of SOML, including possible acceleration of Nigeria's graduation from GAVI.
- Sponsor studies of State and LGA spending with own resources for health and SOML, to better measure current and future subnational government fiscal effort.

For donors

- Create a flexible SOML fund that can be used to fill funding gaps across the SOML portfolio; Focus on increasing the share of external development assistance which is fungible across SOML areas, through e.g., the World Bank's new results based financing project, DfID's health systems support program, and the Global Fund's delegation to the Country Coordinating Mechanism of decision-making over the allocation of Nigeria's new funding envelope (\$1.1 billion over 2014-16) across the three diseases.
- Champion new mechanisms to provide more predictable long-term funding for SOML priorities lacking such mechanisms, including nutrition and MCH.

For the PDU

- Working with disease program counterparts in government and donors, use LIST to explore the implications of alternative allocations of available funding across interventions, in order to maximize the health impact of SOML using likely funds even with expected shortfalls
- Develop options and work with FMOH, FMOF, States, and donors to adopt a plan for sustaining spending after 2015
- Update cost and financing projections regularly and develop gap-closing scenarios
- Continue to monitor and report state and program performance, conduct joint diagnosis with states and federal programs when performance is below expectations, and track progress toward SOML targets.

Annex I: PMTCT costing models

State-level PMTCT Costings: The PDU and other partners shared PMTCT costings from four Nigerian states— Rivers, Cross River, Nasarawa, and Bayelsa. We analyzed these costings to assess whether they could be used to credibly extrapolate PMTCT resource needs nationally for Nigeria. On the outset, the proposition seemed problematic as levels of political commitment and health system capacity are too variable across states to uniformly implement PMTCT plans. Additional problems include:

- Costings vary considerably between states. Bayelsa, with 5.12% of national HIV burden projected only \$1.06 million in estimated 1-year PMTCT costs, and Cross River with 3.99% of national HIV burden estimated \$4.22 million over the same period. Similarly, Rivers State, with 3.37% of national burden, estimated \$84.96 million while Nasarawa with 4.22% of national burden estimated \$6.12 million in 3-year PMTCT resource needs respectively.
- Differential cost estimates stem from use of different methodologies across states. For instance, Bayelsa only budgeted for commodity costs and Cross River estimated resource needs for only commodities and staffing. Rivers State used a budget model developed as part of its eMTCT action plan to estimate costs across a range of program areas and reached a comparatively much larger figure.
- Nasarawa has the most complete state-level costing, but questions remain as to whether it can be feasibly extrapolated to obtain national-level PMTCT program costs since, as a small state of about two million (1/85th of population), Nasarawa is not a typical example of Nigeria's general population. First, while Nasarawa a well-developed cost model, it is tailored specifically to the context of Nasarawa, considers only some 300 local clinics, and focuses on incremental costs of new facilities and patients. Hence, the model's structure and inputs do not lend themselves well to the national setting. Besides, merely extrapolating for all of Nigeria from this small model would yield an unreliable and very high resource needs estimate. At an average annual growth rate of 10.6%, the model estimates about \$8.4 million in total Nasarawa PMTCT costs between 2013-16 (or about \$10.8 million for 2013-17). A rough estimate for a population some 85 times larger over the same period yields a far higher resource needs estimate than the one estimated in this report using a modified CHAI model. Hence, it seems much more tenable as an intellectual exercise to draw from a national-level, activities-based costing model where coverage levels and unit costs can be manipulated to produce varying cost estimates.

Hence, deriving national-level resource needs from state costings seemed like a risky proposition at this stage, and hence we decided not to use this approach to estimate nationwide PMTCT funding needs.

- **PCRCP Budgeting:** Developed in July 2013, the budget for the President's Comprehensive Response Plan calls for \$333.8 million for national PMTCT scale-up during two years (2013-14 and 2014-15). Available financing sheets shared with us focused on the scheme of burden-sharing between federal and state governments and the private sector, and did not construct a bottom-up, activities-based model for scaling up PMTCT across a comprehensive range of program areas (staffing, commodities, facilities, training, outreach, etc). Beyond proposing a formula for splitting the overall program costs, the PCRCP budget was also not clear about how and at what level of government funds would be allocated for individual program areas, some of which, like personnel and infrastructure costs, are typically among the largest components of PMTCT budgets. Our analysis of available PCRCP documents suggested that the primary thrust of the plan, in line with the mission of the National Agency for the Control of AIDS, was to advocate for more funding for AIDS and to encourage an enhanced domestic spending effort. Hence, the program documents did not take us very far in terms of building reliable estimates of resource needs for various AIDS services like PMTCT.

However, as an indicative vision of PMTCT financing in Nigeria, this model holds promise for suggesting proportions for equitable burden-sharing in domestic financing once a reliable cost estimate has been agreed upon, especially since it allocates resources to states in proportion to their share of HIV burden. The PCRCP may also be useful for breaking up resource needs by domestic and foreign sources as it envisages full domestic funding for the entire PCRCP, thereby raising domestic resource contribution to 60% of the full cost of the national AIDS program in Nigeria from the current 25%. It has already stimulated discussion among various sections of policymakers in Nigeria on the proposed financing burdens and the needed for expanded domestic financing. The PCRCP may have been instrumental in persuading the Ministry of Finance to propose an allocation of 8 billion Naira for AIDS under the SURE-P section of the 2014 budget.

- **Clinton Health Access Initiative:** In 2012, CHAI estimated PMTCT costs in Nigeria at \$976.7 million for 2012-16, of which \$596.5 million for the original three year time period for SOML (2013-15). The major strength of the

CHAI model is that it derives resource needs from a detailed, granular, activities-based PMTCT model focused on service delivery to HIV positive pregnant mothers and breastfeeding infant-mother pairs across the overall population. The model separately estimates and then aggregates resources across major PMTCT program areas, and uses updated commodity costs and demographic and epidemiological information on Nigeria. However, it does not include financing projections or any related scenario analysis, and does not incorporate any price movements in projecting year-to-year costs. The model also does not exogenously estimate distribution or infrastructure costs for PMTCT which could potentially result in significant revisions to these numbers. Instead, it calculates distribution costs as a percentage (20%) of lab and drug commodity costs, and assigns only a portion of the costs of overall infrastructure improvements needed to PMTCT.

Annex II: Revised coverage targets, resource needs, and cost drivers under PMTCT re-costing

	2012	2013	2014	2015	2016	2017
	ANC Coverage during Pregnancy or Delivery					
Original SOML	58.0%	68.7%	79.3%	90.0%	—	—
Original CHAI	60.0%	80.0%	90.0%	95.0%	98.0%	—
Modified CHAI Re-costing-FAST	58.0%	64.4%	70.8%	77.2%	83.6%	90.0%
Modified CHAI Re-costing-MODERATE	58.0%	61.2%	64.4%	67.6%	70.8%	74.0%
Modified CHAI Re-costing-SLOW	58.0%	58.0%	58.0%	58.0%	58.0%	58.0%
	Pregnant women tested for HIV					
Original SOML	33.0%	52.0%	71.0%	90.0%	—	—
Original CHAI	63.5%	70.0%	80.0%	85.0%	96.0%	—
Modified CHAI Re-costing-FAST	33.0%	44.4%	55.8%	67.2%	78.6%	90.0%
Modified CHAI Re-costing-MODERATE	33.0%	38.7%	44.4%	50.1%	55.8%	61.5%
Modified CHAI Re-costing-SLOW	33.0%	33.0%	33.0%	33.0%	33.0%	33.0%
	HIV+ pregnant women in ANC on PMTCT					
Original SOML	—	—	—	90.0%	—	—
Original CHAI	50.0%	65.0%	77.0%	90.0%	96.0%	—
All Scenarios under Modified CHAI	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%

PMTCT resource needs by scale-up scenario

SOML PMTCT: Fast Scale-Up (Mil \$)	2013	2014	2015	2016	2017	2014-17 Total	Cost Share
Staff, Lab, & Drugs							
HRH Costs	9.6	13.7	18.5	24.2	30.7	87.1	16.4%
Lab Commodity Costs incl. distribution	10.7	15.5	21.3	28.1	35.8	100.7	19.0%
Drug Commodity Costs incl. distribution	20.4	30.5	43.4	59.4	76.0	209.2	39.5%
Subtotal	40.7	59.7	83.2	111.7	142.5	397.0	74.9%
Operational Cost Considerations							
Training	21.6	27.4	27.4	27.4	27.4	109.5	20.7%
M&E	0.1	0.1	0.1	0.1	0.1	0.4	0.1%
Other Operational Costs	5.6	3.1	7.7	6.1	6.1	23.1	4.4%
Subtotal	27.3	30.6	35.2	33.6	33.6	133.0	25.1%
Total	68.1	90.3	118.4	145.3	176.1	530.1	100.0%

SOML PMTCT: Moderate Scale-Up (Mil \$)	2013	2014	2015	2016	2017	2014-17 Total	Cost Share
Staff, Lab, & Drugs							
HRH Costs	8.0	9.9	12.1	14.5	17.3	53.8	14.2%
Lab Commodity Costs incl. distribution	8.9	11.2	13.9	16.9	20.1	62.1	16.4%
Drug Commodity Costs incl. distribution	16.9	22.1	28.3	35.7	42.7	128.8	34.1%
Subtotal	33.7	43.2	54.3	67.1	80.1	244.7	64.8%
Operational Cost Considerations							
Training	21.6	27.4	27.4	27.4	27.4	109.5	29.0%
M&E	0.1	0.1	0.1	0.1	0.1	0.4	0.1%
Other Operational Costs	5.6	3.1	7.7	6.1	6.1	23.1	6.1%
Subtotal	27.3	30.6	35.2	33.6	33.6	133.0	35.2%
Total	61.1	73.8	89.5	100.7	113.7	377.7	100.0%

SOML PMTCT: Slow Scale-Up (Mil \$)	2013	2014	2015	2016	2017	2014-17 Total	Cost Share
Staff, Lab, & Drugs							
HRH Costs	6.4	6.6	6.8	7.0	7.3	27.8	10.7%
Lab Commodity Costs incl. distribution	7.2	7.5	7.8	8.2	8.5	32.0	12.4%
Drug Commodity Costs incl. distribution	13.6	14.8	16.0	17.3	18.0	66.0	25.5%
Subtotal	27.3	28.9	30.7	32.5	33.7	125.8	48.6%
Operational Cost Considerations							
Training	21.6	27.4	27.4	27.4	27.4	109.5	42.3%
M&E	0.1	0.1	0.1	0.1	0.1	0.4	0.2%
Other Operational Costs	5.6	3.1	7.7	6.1	6.1	23.1	8.9%
Subtotal	27.3	30.6	35.2	33.6	33.6	133.0	51.4%
Total	54.6	59.5	65.9	66.1	67.3	258.8	100.0%

PMTCT cost drivers

Program Component	Constituents	Notes
HRH Costs	HIV Testing and Counseling	Counselor
	CD4 testing during pregnancy	Nurse and Lab Technician
	Clinical exams and routine CD4 monitoring – women on ART	Lab Technician
	Clinical exams and routine CD4 monitoring – women on Option A	Doctor
	Clinical exams and routine CD4 monitoring – women on Option B	Nurse
	EID	Nurse, Lab Technician, Counselor
	Referral, retention, and linkages	Community Health Worker
	Pediatric Testing (CD4, FBC, ALT)	Nurse and Lab Technician
	Pediatric Clinical Exam	Doctor
Lab Commodity Costs (incl. 20% distribution)	HIV Rapid Tests	
	Anemia Tests	
	CD4 testing during pregnancy	
	CD4 (commodity cost) – women on ART	
	CD4 (commodity cost) – women on Option A	
	CD4 (commodity cost) – women on Option B	
	EID	
Drug Commodity Costs (incl. 20% distribution) <ul style="list-style-type: none"> • Total program drug cost by regimen for pregnant women during the pregnancy and breastfeeding period • Total program drug cost by regimen for treatment during the period between pregnancies (while not pregnant or breastfeeding) 	Treatment AZT+3TC+NVP	
	Prophylaxis Option A	
	Prophylaxis Option B TDF+3TC+EFV	
	sdNVP	
	Treatment AZT+3TC+NVP (between pregnancies)	
Training	HIV prevention counseling for young women	
	Family planning training	
	Care of the HIV infected pregnant woman – ART eMTCT regimens, formulations, regimens	
	Safe delivery	
	Management of pediatric HIV and care of exposed infants	
	Point-of-care CDA4 testing, including QA	
	Monitoring and evaluation	
	STI training and management	
	Family planning & contraception for positives	
	Psychosocial support and adherence for positive mother	
	HIV testing and counseling	
	Nutrition & infant feeding	
	DBS sample collection and infant diagnosis	
	Central laboratory training: esp. for CD4, viral load, DNA PCR inc data management	
	HIV testing in the community	
LTFU tracking and retention		
Other		

table continues on page 58

PMTCT cost drivers (continued)

Program Component	Constituents	Notes
M&E	Computers at sub-national levels/sites	
	Software & systems development	
	Supervision & data quality auditing visits	
	Surveys/Evaluation study for priority Qs	
	Data dissemination/facility feedback visits	
Other Operational Costs	Printing	
	Build, refurb, maintain facilities (total costs to build, refurb, and maintain entire health facility will be higher as this estimate only includes projected facilities costs attributed to the PMTCT program)	
	Lab capital expenditures	
	Non-lab capital expenditures	
	Vehicles and fuel/maintenance	
	Supply chain strengthening	
	Lab sample transport	
	Communication	
	Retention and linkage interventions	
Overhead/project mgmt costs		

Annex III: Changes to ACT/RDT costing in October 2012 SOML spreadsheet

- Applied reduction in fevers from vector control to malaria fevers only.
- Reflected change in ration of non-malarial to malarial fevers to test positivity rate
- Corrected gains from diagnosis formula, into which the positivity rate had entered in the wrong direction
- Reduced diagnosis coverage targets in 2014 and 2014 to reflect assumption that only 40% of treatment is in public sector. Reduced public-sector contribution to a maximum of 40%, increased maximum coverage in private sector to 10%. Total diagnostic coverage now reached 50% instead of 60% in 2015.
- Corrected discrepancy between assumed diagnostic coverage in 2012 between rows 43 and 75 (in original workbook).
- Extended costing to 2017 with the following assumptions
 - ACT coverage remains constant at 85%
 - Impact of vector control rises to 30% in 2016 and 2017
 - RDT coverage increases to 55% and 60% in 2106 and 2017 as a result of increasing diagnosis in the private sector

Annex IV: Assumptions for malaria financing projections

Medium scenario

Global Fund

- Remaining Phase 2 and interim funding is spent over 2014 (2/3) and first half 2015 (1/3)
- New Global Fund money comes in mid-2015. Amount is based on \$15 billion replenishment, 7.5% cap for Nigeria, and agreed disease breakdown. One sixth of the funding is spent in 2015 and one-third each in 2016 and 2017.
- New money is allocated across the three included interventions according to the SOML costing projections of needs in 2014. The fraction of the money going to included costs is based on the Round 8 proposal (90%).

Private-sector case management subsidies (AFMm and successors)

- 2013 funding is from AMFm transition allocation
- DfID provides the full amount requested in the business case for 2014
- No earmarked funding afterwards

PMI

- The total funding amount and distribution across interventions continues through 2017 at 2013 levels.

DfID

- Funding from the extension to the original Sunmap grant is split between 2014 and 2015
- Funding and allocation across interventions remains constant in 2016 and 2017.

World Bank

- All remaining Booster Programme funds spent in 2013 and 2014. Commodity amounts per Moriam's email for 2012, 2013, 2104, without additional 5 million nets for 2014.
- No further vertical malaria funding thereafter.

Nigerian government (all levels)

- Funding 2013 through 2016 (only nets) is as projected in April gap analysis. Continues in 2017 at same level.

Pessimistic scenario

As in the medium projection, with the following modifications:

- New Global Fund Money: 10% less than in medium scenario.
- New Global Fund money based on \$10 million replenishment
- PMI funding declines by 25% between 2013 and 2014, remains constant thereafter.
- Government funding ends after 2015, with expiry of MDG fund.

Optimistic scenario

As in the medium projection, with the following modifications:

- New Global Fund Money: 10% more than in medium scenario.
- Interim funding is all spent in 2014
- NFM money starts flowing start 2015, amount based on \$20 billion
- Catalytic Fund or other new mechanism supports private sector in 2015-2017, equivalent to DfID business case amount for 2014.
- DfID funding increases by 10% in 2016, a further 10% in 2017.
- WB buys additional 5 million nets in 2014, as stated in Moriam's email.
- Government funding increases to equivalent of 25% of Global Fund financing (as required by counterpart financing policy) by 2017, linearly from amount in 2013. In 2014-2017, breakdown as 2014 SOML costs.



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