Sustainable Financing for Priority Programs in Kenya

A Technical Review of Priority Programs in Kenya

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Table of Contents

Acknowledgements **2**
Abbreviations and Acronyms **5**
Executive Summary **6**
Introduction **6**
1. Introduction **21**
2. Objective and scope **22**
3. Methodology **22**
4. Background **24**
Overview of country context 24
Socio-demographic and health context 24
Economic context 25
Macrofiscal context 27
The Kenyan Health Sysytem 29
Health Financing 30
Leadership and Governace 42
Human resources for health 43
Health Information Systems 44
Medical products and technologies 46
5. The Case of Priority Health Programs in Kenya **47**
5.1. Immunization 47
5.1.1. Governance of the immunization program in Kenya 49
5.1.2. Immunization service delivery, outcomes and determinants 50
5.1.3. Financing of Immunization 59
5.1.4. Human resources for immunization 66
5.1.5. Vaccines and medical products for immunization 66
5.1.6. Key Challenges of the Kenya Immunization Programme 69
5.1.7. Sustainability of immunization in Kenya 71
5.1.8. On-going studies 73
5.1.9. Potential areas of future work 73
5.2. HIV /AIDS 74
5.2.1. Epidemiology of HIV/AIDS in Kenya 75
5.2.2. Governance of the HIV/AIDS response 76
5.2.3. Financing for HIV/AIDS in Kenya 77
5.2.4. HIV/AIDS treatment coverage 86
5.2.5. Challenges 86
5.2.6. Sustainability options 87
5.2.7. On-going studies 92
5.3. Malaria 94
5.3.1. Epidemiology of Malaria in Kenya 95
5.3.2. Governance of the Malaria response in Kenya 95
5.3.3. Financing for the Malaria response in Kenya 97
5.3.4. Malaria Service delivery 100
5.3.5. Sustainability of the Malaria response in Kenya 100
5.3.6. Challenges 101
5.3.7. On-going studies 105
5.4. Tuberculosis 106
5.4.1. Epidemiology of Tuberculosis in Kenya 106
5.4.2. Governance of the Tuberculosis response in Kenya 108

5.4.3. Financing for Tuberculosis in Kenya 108
5.4.4. Sustainability of the Tuberculosis response in Kenya 112
5.4.5. On-going studies 113
5.5. Reproductive Health and Family Planning 114
5.5.1. Reproductive health outcomes and determinants in Kenya 114
5.5.2. Governance of reproductive health programs in Kenya 116
5.5.3. Financing for reproductive health in Kenya 117
5.5.4. Challenges to sustainable financing of reproductive health programs in Kenya 119
5.5.5. On-going studies 119
6. Summary of key findings 120
7. Gaps in knowledge 123
8. Recommendations 126
9. Areas of future work 129
10. Conclusion 131
Annex 132
Annex 1. List of reviewed literature 132
Annex 2. List of participating organizations 135
Annex 3. Additional figures and Tables 136

Abbreviations and Acronyms

CCE	Cold Chain Equipment
CHE	Current Health Expenditure
CHW	Community health worker
CPR	Contraceptive Prevalence Rate
DFID	Department for International Development
FY	Financial year
GDP	Gross Domestic Products
HIV/AIDS	Human immunodeficiency virus/acquired immune deficiency syndrome
HPP	Health Policy Project
KHHUES	Kenya Health Household Utilization and Expenditure Survey
KNBS	Kenya national Bureau of Statistics
KES	Kenya shilling
MCF	Medical Credit Fund
MET	Medical Equipment technician
MFI	Microfinance Institution
MOH	Ministry of Health
NACC	national AIDS Control Council
NASCOP	national AIDS and STI Control Programme
NCD	Noncommunicable disease
NGO	Nongovernmental organisation
NHA	national Health Accounts
NHIF	national Health Insurance Fund
NPISH	Nonprofit institutions serving households
OECD	Organisation for Economic Co-operation and Development
OOP	Out-of-pocket
RH	Reproductive health
SHA	System of Health Accounts
TB	Tuberculosis
OPEX	Operational expenditure
PAT	Profit after tax
PEPFAR	President's Emergency Plan for AIDS Relief
PFM	Public Finance Management
PHI	Private health insurance
ROI	Return on investment
RMNCAH	Reproductive, maternal, newborn, child and adolescent health
SARAM	Services Availability and Readiness Assessment Mapping
THE	Total health expenditure
USAID	United States Agency for International Development
USD	United States Dollar
WHO	World Health Organization

Executive Summary

Introduction

Kenya has experienced sustained economic growth over the past few years. The country's gross domestic product (GDP) has grown at an average annual rate of 5.2% over the past 10 years (2007 to 2016). The rebasing of its national accounts in 2014 resulted in an upward revision of the country's GDP per capita and its re-classification as a lower middle income country (LMIC). Kenya's economic prospects mean that the country is surpassing critical income eligibility thresholds for international financing and is bound to experience reduced international financing for its priority programs.

Kenya relies significantly on external funding to finance the health sector. Up to 26% of the Total Health Expenditure (THE) is from donors. The reliance on donor funding is much higher for immunization and other vertical programmes. In 2012/13, the country spent KES 147.5 billion (USD 1.7 billion) on vertical programmes. About 72.6% of HIV/AIDS funding, 36.4% of Tuberculosis and 40.2% of immunization funding came from donors. Although there are some improvements in government allocations to the health sector, the heavy reliance on donor funding for these programmes raises serious concerns for their financial and institutional sustainability. With reclassification of the country to a LMIC, Kenya will progressively graduate from international support for vertical programmes. Without sufficient domestic resources to support these programmes, the health gains made over the last two decades may be short-lived.

This technical review analyzed the design and financing of five priority programs in Kenya (Immunization, HIV/AIDS, Tuberculosis, Malaria and Reproductive Health) in relation to their sustainability as Kenya transitions from a donor dependent country, to one that predominantly finances health through domestic resources. Guided by the World Health Organization (WHO) health systems framework and World Bank guidelines on conducting health financing assessments, the review demonstrates the extent to which the five priority programmes are adequately financed, predictability in financing, their governance and service delivery structures, identifies key gaps and makes recommendations on how these can be addressed.

The review forms the first phase of work, which involves conducting a detailed analytical assessment and synthesis of a wide range of studies to assess the financing and delivery of immunization and other priority programmes in Kenya. The report will serve as a 'one-stop-shop' for the government, partners and other stakeholders interested in sustainable financing and integration of vertical programmes in health service delivery. The second phase of the work will draw on findings and recommendations from the first phase to support the national and county governments to implement interventions that will improve Kenya's readiness to transition its priority health programs towards being sustainably financed.

Key findings

Cross-cutting issues affecting the five priority (vertical) programs

This technical review identified several cross-cutting issues that affect the five priority health programs, in relation to the health systems building blocks.

1. Governance

Weak coordination between national and county governments undermines service delivery: From a governance point of view, two key issues affect the financing and delivery of services provided under the five priority programmes. Since the devolution, first implemented in 2013, there has been a lack of clarity on the roles and obligations of the national and county governments in relation to these programmes. Lack of clarity has led to a 'power' struggle, blame game and weak coordination between the two levels of government, which undermines service delivery and efficiency. For instance, the country lacks a coordination framework to guide and harmonize immunization-related activities between the national and county governments. This has been cited as one driver of the stock-outs of needles and vaccines for immunization that has been experienced in some counties.

2. Health financing

Kenya needs to spend more on all five priority programs, while seeking for efficiency gains in funds already available

All five programs are characterized by significant funding gaps (**Table A**), ranging from KES 382 billion (USD 4.5 billion) for HIV/AIDS program to KES 18.2 billion (USD 215 million) for TB. These gaps represent a significant proportion of the total funding required for the full implementation of the mandate of these programs. For instance, the immunization program requires KES 70.4 billion (USD 828 million) between 2016 and 2020 to implement its plans as provided for in the comprehensive multi-year plan (CMYP). Out of this amount, only KES 25.7 billion (USD 303 million) is secured leaving a funding gap of KES 44.6 billion (USD 525 million; approximately 63% of total financing requirement). The funding gap highlights the challenge of inadequate funding and may be, in part, attributable to inefficiencies and fragmentation in funding allocation and service delivery – however, there is limited evidence on

Financial sustainability of health systems and priority programs in Kenya

From a sustainable financing perspective, priority health programs in Kenya are characterized by:

- Inadequate funding
- Unpredictability of financial inflows
- Absence of contingency financing that can be sourced in a timely manner
- Limited evidence on the efficiency of healthcare expenditure

the efficiency of healthcare expenditure. The challenges related to adequacy of funding are further exacerbated by the unpredictability of financing as well as the lack of contingency financing. Across all the five programs there lacks contingency funding that can be mobilized in a timely manner to cater for upsurges in expenditure such as abrupt increases in disease burden. If the existing funding gap is to be filled fully by government funding (assuming contribution from donors remains constant) the government budget for health will need to increase by 53% from the current KES 152 billion (USD 1.8 billion) to KES 233 billion (USD 2.7 billion).

Table A. Funding gaps associated with priority health programs in Kenya

Program	Resources needed (USD Million)	Available resources (USD Million)	Available resources from government (USD Million)	Funding Gap (USD Million)[1]	Estimated Annual Funding Gap (USD Million)	Estimated Annual Funding Gap (as a % of annual resource requirements)	Percentage increase in government budget for health if funding gap is to be bridged by government
Immunization	828	606	356	525 *(2016-2020)*	105	63.4%	53%
HIV/AIDS	11,899	7,358	Not specified	4,546 *(2015-2024)*	454	38.2%	
Malaria	600	272	Not specified	328 *(2014-2019)*	82	54.6%	
Tuberculosis	277	63	45.8	215 *(2015-2018)*	53.8	77.7%	
Reproductive Health	2,745	2,160	Not specified	580 *(2015-2020)*	116	21.1%	

Data source: Comprehensive Multi-Year Plan for Immunization 2015 – 2019 (CMYP 2015 – 2019); Kenya AIDS Strategic Framework (2014-2019); Kenya Malaria Strategy (2014-2019); Kenya national Strategic Plan on Tuberculosis, Leprosy and Lung Diseases (2015 – 2018); Kenya reproductive, maternal, newborn, child and adolescent health (RMNCAH) investment framework. MoH. 2016

NB: The funding gap provided above are based on figures reported in the strategy documents and annual plans of different priority programs and are therefore not directly comparable.

[1] ***Forecast years considered in funding gap provided in parentheses***

Financing of priority programs in Kenya is significantly donor dependent

The health financing concerns identified in this technical review are particularly evident in the five priority programs investigated here. Each of the five programs is significantly dependent on donor funds. For instance, in the 2013/2014 financial year, 72% of the Kenya Shillings 43.7 billion (USD532.1 million) total health expenditure on HIV/AIDS (THE_{HIV}) was financed by donors, up from 51% in the 2009/2010 financial year. Despite the significant reliance on donor funds, each of the programs is challenged by significant funding gaps (Table A). The significant reliance on donor funds emphasizes the need to identify and implement alternative and sustainable financing mechanism to safeguard the gains made so far through these priority programs.

Donors can improve government planning and budgeting of priority programs by making their financing more predictable and aligned to government systems to the extent possible

Structures, policies and guidelines that would otherwise provide for predictable financing of priority programs are to a large extent lacking. For instance, policies or guidelines that inform PEPFAR's long term funding of the HIV/AIDS response in Kenya are unclear as regards predictability of financing. While PEPFAR is a major funder of the Kenyan HIV/AIDS response, there are no clear policies on Kenya's long-term eligibility for funding or any guidelines on the amount of funding that PEPFAR can avail to Kenya. While allocations from new PEPFAR appropriations to Kenya specifically have decreased by 50% from 2010-2013, it is unclear whether this trend will continue. The lack of clarity around policies and guidelines is also evident with regards to funding from other donor agencies such as Global Fund and UNAIDS

> *"Donor funding for HIV has flat lined for several years now …. It is known that donor funding (through Global Fund, UNAIDS, USAID etc.) will be phased out at some point in time but it is not clear what time this will be." – Respondent 2*

3. Service delivery, outcomes and determinants

Priority programs are performing below their set targets

The seriousness of the challenges related to inadequate financing of priority programs in Kenya is further compounded by observation that even with the current level of funding none of the priority programs has fully achieved treatment and/or service delivery targets. For instance, DPT3 vaccine coverage in Kenya is currently at 81% - lower than the 90% internationally-endorsed target. Further, while Kenya is committed to having at least 80% of its population using appropriate malaria prevention interventions such as ITNs and IRS by 2018, the country has only managed to have 52% of its population using these prevention interventions.

4. Health Information Systems (HIS)

The Kenyan health system suffers from a suboptimal generation and warehousing of health data and information to support decision making. Despite there being significant investments towards building HIS platforms such as the District Health Information System2 (DHIS2), there are significant qualitative and quantitative gaps in health data. This technical review found that reporting of health data on platforms such as DHIS2 by health facilities in the public sector is incomplete and inaccurate and there is hardly any data reported on the DHIS2 platform by the private sector. For instance, in 2015, reporting of malaria data on DHIS2 from the public sector only attained a completeness level of 42% while less than 3% of data values for malaria tests performed in the private sector were reported in DHIS2. The inconsistent availability of data on DHIS2 has negatively impacted the ability of priority programs to use data for decision making. For instance, the national Malaria Control Program (NMCP) reported that it is unable to use data on DHIS2 to reliably make decisions around commodity procurement. The inconsistent availability of data has led to priority programs to maintain data capture systems that are parallel to DHIS2.

5. Essential medical products, vaccines and technologies

There are significant gaps in the availability of medical commodities in Kenya. For instance, with regards to the immunization program, Kenya experienced high rates of stock-outs of vaccines between October and December 2016. According to the immunization performance and vaccine cold chain summary report of February 2017, these stock-out rates have been reported to be as high as 44% in some counties with regards to BCG vaccines. Medical commodity unavailability has also been reported in other priority programs. The mean availability of malaria commodities in 2013 at primary health facilities and hospitals was only 55% and 65% respectively according to the SARAM report. Beyond the quantitative gaps in medical products, there is also evidence that the quality of medical products in Kenya is to some extent sub-optimal with a recent study estimating that as much as 17% of medical products in the Kenyan health system do not meet quality specifications. According to the immunization performance and vaccine cold chain summary report of February 2017, stock outs of vaccines may potentially explain the declining vaccine coverage rates described above.

6. Human resources for health

In Kenya there are significant deficits in human resources for health and the number of health workers in the country compares poorly to Africa and global estimates. According to the SARAM report, the doctor–to-population ratio in Kenya is less than 1 per 10,000 and falls short of the national benchmark of 3 medical officers per 10,000 people. Kenya has 1.8 doctor and 7.9 nurses and midwives per 10,000 population compared to an average of 2.8 and 12 for Africa respectively. Notably, there is a complete lack of certain cadres and specialties of healthcare workers in specific counties as well as significant variations in the ratios of healthcare workers to the population across counties.

Program-specific issues

The five priority health programs are to a large extent vertical and independent of each other and are only integrated with regards to HRH and HIS. Health workers employed by the national and county government provide healthcare services across the five programs. Data on service delivery from all the five programs are to a large extent all warehoused on the same health information platforms such as the DHIS2. These programs are largely independent of each other with regards to governance, financing and procurement and supply chain management of medical products.

This technical review identified several issues that are specific to individual priority programs which affect sustainability of these programs. The key challenges are outlined below:

1. **Immunization Program**

- **Vaccine coverage is on the decline, which potentially undermines the gains made in the last decade**
  Vaccine coverage in Kenya has been on the decline over the past 5 years. Relative to pre-devolution estimates, vaccine coverage has declined across all antigens and is currently below the 90% target set out in the Global Vaccine Action Plan (GVAP) to which Kenya is a signatory. DPT3 coverage, for instance, has declined from 96% in 2011 to 81% in 2016 suggesting that with devolution, and gaps in commodity procurement that came with it, the gains that had been previously made (in terms of vaccine coverage) have, at least in part, been lost.

- **Deficiencies in cold chain equipment (CCE) infrastructure**
  There are significant deficiencies in Kenya's CCE capacity. According to a national cold chain inventory mapping exercise conducted in 2016, out of the 6,911 health facilities across the country, only 82% had cold chain equipment. Further, 25% of CCE that are available in health facilities is not Performance Quality Safety (PQS) compliant and thus not recommended for the storage of vaccines. At sub-county stores, 39% of equipment is aged more than 10 years and is therefore not suitable for vaccine storage.

- **Inconsistent availability of vaccines**
  Kenya experiences varying levels of vaccine stock-outs through the year. According to a survey done between October and December 2016, there were significant stock-outs of vaccines in some counties over the 3 months of the survey. There were wide variations in stock out rates across counties and, importantly, stock out rates as high as 37%, 39% and 44% in specific sub-counties in Narok, Nyamira and Nairobi Counties

- **There is inadequate data on Medical Equipment Technicians (METs), both in terms of numbers, and expertise**

There is a lack of systematic data on the number and expertise of METs in Kenya yet the country relies on this cadre of health workers to service and maintain CCE. What this technical review could gather are only anecdotal reports on the number of METs that have been trained through donor funded training programs. The qualification and expertise of these METs is also largely unknown. In counties where METs are employed, these METs have varied background training. Some were trained as biomedical technicians at the Kenya Medical Training College (KMTC) before they were hired by the county governments. Others were initially community health workers who were trained by MoH on how to repair fridges and other medical equipment after which they have been loosely referred to as METs even though their level of training is below that of biomedical technicians.

- **Poor coordination between national and county governments has led to inadequate supply of supplies, including immunization needles and syringes**
  Following devolution, there was a lack of clarity on the role of the national and county governments in relation to the procurement of vaccines, needles and syringes. A compromise decision saw county governments tasked with procurement of needles and syringes while the procurement of vaccines was left as a preserve of the national government. The failure of some county governments to procure adequate syringes and needles for the administration of vaccines in FY2014/15 led to the inability to administer vaccine such as the BCG vaccine and is likely to have contributed to the decline in vaccines coverage experienced in Kenya since 2014.

- **The future vaccine prices remain uncertain, making it difficult for government to adequately prepare for transition**
  Planning for the transition of the immunization program's financing towards sustainable domestic financing mechanisms is challenged by uncertainty in future vaccines prices once GAVI's support ends. Although some vaccine manufacturers have indicated that they will continue to provide the 'GAVI-negotiated prices' to countries even after they graduate from GAVI's support, the prices that Kenya will pay is not guaranteed. The price that Kenya will pay for vaccines after it has fully transitioned out of GAVI's support will depend on several factors that are not in the country's control including global market dynamics, the policies adopted by manufacturers based in part on discussions with GAVI, WHO, United Nations Children's Fund (UNICEF), the vaccine presentation selected and procurement methods adopted by Kenya.

2. HIV/AIDS Program

- **Lack of consensus among stakeholders on metrics for tracking efficiency**
  Among stakeholders working in the HIV/AIDS space in Kenya, there lacks consensus on a common metric against which efficiency of the HIV/AIDS response can be measured. Unit costs of providing HIV/AIDS services in health facilities in Kenya vary by a factor of up to 40. The absence of consensus on these metrics and in turn the limited evidence on the efficiency of the Kenyan HIV/AIDS response is likely to have hampered the identification of efficiency gains that can complement efforts to bridge existing financing gaps.

- **Limited (if any) transition of evidence to practice.** Several studies have been conducted to assess the financing of HIV/AIDS in Kenya. However, there have been limited efforts towards assessing and exploring the alternative financing options that are available to the government to bridge the financing gaps that reductions in international financing will create. This is partly due to lack of standardized methodologies, which make it difficult for government to synthesize and translate findings into policy and practice.

3. Malaria Program

- **Sub-optimal attempts to transition the financing and procurement of some malaria commodities from donors to government**
  In 2015, the government committed to take up the financing and procurement of injectable artesunate for the treatment of severe malaria. However, this commitment did not fully materialize and in 2016, PMI procured 500,000 vials of injectable artesunate to complement the procurement of this medication by the government.

- **Sub-optimal attempts to transition the financing and procurement of some malaria commodities from the national to county government**
  An attempt in 2015 to have the county governments procure sulfadoxine-pyrimethamine (SP) for the prevention of malaria in pregnancy in 2015 were not successful and resulted in stock outs of the medication.

4. Tuberculosis Program

- **Underestimation of the true burden of TB**
  A recent TB prevalence survey conducted in Kenya revealed that the TB prevalence in Kenya stands at 558 cases per 100,000 adult population - approximately 52% higher than previously estimated by WHO (266 cases per 100,000 population in 2014). Considering that the financing gaps presented in the Kenya national Strategic Plan on Tuberculosis, Leprosy and Lung Diseases (2015 – 2018) are based on the WHO estimates, the true funding gap is likely to be grossly understated.

5. Reproductive Health / Family Planning Program

- **Lack of RH/FP commodity line budget item post devolution**
  Post devolution, the budgetary allocation for RH/FP commodities was transferred to county governments. However, it was not transferred as funds earmarked for RH/FP commodity procurement rather as part of the county equitable share of revenue. This has resulted in the national government coordinating the forecasting and supply planning of contraceptive commodity needs without the ability to procure the commodities. On the other hand, the county governments have the funds to procure RH/FP commodities but are not consistently doing so.

Proposed sustainable financing mechanisms have major shortcomings

Several mechanisms for the sustainable financing of priority programs have been put forward by the authors of previous studies on sustainable financing of priority programs in Kenya. They include the establishment of dedicated funds (e.g. investment/ trust funds) that are ring-fenced to finance individual priority programs; a forward moving tax revenue based on taxation of pension contributions in the case of the immunization program; local (county-level) taxes to fund the HIV/AIDS response in counties with high HIV/AIDS disease burden; multiple recapitalization mechanisms including debt-swap options, AIDS lottery, Corporate Social Investment (CSI), infrastructure HIV/AIDS resources, health bonds, a portion of interest from dormant funds; and organized informal sector contributions in the case of the HIV/AIDS program.

A review of the mechanisms put forward to transition priority programs in Kenya towards being sustainably financed reveal significant shortfalls.

First, all reviewed studies on sustainable financing of priority programs have **investigated individual priority programs in isolation**. This technical review did not find any studies that investigated or proposed sustainable financing mechanisms that would accommodate all the priority programs. One study - a fiscal analysis commissioned by the World Bank Group investigated financing mechanism for HIV/AIDs and separately for universal health coverage (UHC) but did not look into the five priority programs collectively.

- Second, the establishment of ring-fenced funds within individual priority programs will **exacerbate the fragmented nature of these programs and promote inefficiencies.** While there may be benefits of earmarking funds to a specific disease programs/sectors, international experiences indicate that that such represent a small percentage of general expenditure on health (<=1%) and are less popular with Ministries of Finance.

- Finally, this review also found that the proposed funding mechanisms (such as the establishment of an Immunization Trust Fund capitalized by a forward moving tax on pension contribution; and the introduction of income tax on people working in the informal sector to capitalize a HIV/AIDS trust fund) are incomplete in several respects, as they do not assess the revenue generating potential of the proposed taxes, their additionality (or lack of), the feasibility and acceptability. Additionally, the proposal to establish a HIV trust/investment fund does not clearly outline how the recapitalization mechanisms will be implemented.

Recommendations

On the basis of insights gathered this report makes the following recommendations:

Governance

Governance models for the provision of health services that have a public good: Experiences at the national and county government levels over the last five years, especially with regards to financing and timely procurement of essential medical products, suggest that there is need to optimize the governance of priority health programs – especially with regards to services that have a public good. While devolution has its merits, including greater accountability at lower levels government that is closer to the citizens, insights gathered in this technical review suggests that the risk of losing on economies of scale (e.g. pooled procurement) outweighs the gain in accountability. What was observed is that commodities that were left to individual county governments to procure (e.g. syringes and needles) were not procured on time (suggesting that accountability at county government level was suboptimal). This resulted, for instance, in vaccines (procured through the national government) being available at health facilities yet needles and syringes were not available. The net effect of this is the observed decline in vaccine coverage rates. On this basis there is merit in exploring mechanisms to retain the management of products/ services that have a public good (e.g. vaccines) at the national government level.

It is recommended that the national and county governments discuss and explore the best model to provide health services that have a public good component. This model may include the retention, within the national government, of functions within the healthcare sector that directly impact the delivery of health services that have a public good component. These functions may include the financing and procurement of vaccines and because immunization is a public good and there is value in pooling the procurement of vaccines across all counties so as to leverage on economies of scale and negotiate for preferential prices on the vaccines. Further, it is recommended that the national and county governments jointly develop a framework to guide the implementation of these functions within the healthcare sector that impact on public good.

Vertical versus integrated structure of priority health programs: There is need for national and county governments to review the merits and demerits of delivering priority healthcare services using the current vertical structure versus an integrated delivery model. This is particularly important considering that, to a large extent, the priority health programs offer services that are for the public good i.e. services (e.g. immunization and control of the spread of TB) whose impact goes beyond the individual programs to influence the wider public. While significant gains have been made in reducing the disease burden improving access to care through the vertical programmes, there is need to carefully consider integrating some, or all components of the vertical programmes to promote efficiency and sustainability.

Coordination of functions and roles between the national and county governments: Over the past five years, instances of sub-optimal coordination (or lack of clarity on roles) between the

national and county governments has impacted negatively on service delivery. It is recommended that the national and county governments work together to build on the provisions of the Intergovernmental Relations Act of 2012 and develop practical guidelines to inform and coordinate the work of the two levels of governments around practical issues such as the procurement of immunization needles and syringes and budgetary provision for RH/FP commodities.

Health Finance

Public finance management (PFM), timing and predictability of tax revenue flows at national and county government levels: Experiences at the national and county government levels over the past five years suggest that there are major bottlenecks in the flow of funds between and within the two levels of governments. These bottlenecks have resulted in instances of stock outs of key medical products due to the failure to allocate and release funds for the procurement of these products in a timely manner. This technical review recommends the review of PFM structures in Kenya to identify bottlenecks and design interventions to address them. These interventions may include: a review of the PFM Act to identify legal bottlenecks; and the training of national and county government officials to strengthen their capacity to improve efficiencies in financial planning and budgetary processes so as to ensure timely flow of funds between and within the two levels of government.

Improvements to the PFM structures will ideally reduce the level of unpredictability of financial flows at the national and county governments. This should, in turn, result in better planning of healthcare programs at the two levels of governments and avert stock outs of medical products such as vaccines as was experienced Between October and December 2016 due to delays in release of funds from the national to county levels of government.

Development of sustainable financing mechanisms to bridge gaps created by reducing international financing: This technical review recommends that national and county governments reviews the merits and demerits of proposals that have been put forward to establish ring-fenced funds to finance individual priority programs. In reviewing these proposal, it is recommended that the proposals be contrasted against mechanisms that will integrate the financing of priority health programs into the wider heath system. An example of a mechanism that would implement this integration is the incorporation of the priority programs into the NHIF and strengthening the revenue base and management efficiency of the national fund to accommodate the cost of offering services that are currently being provided within the priority programs.

Structure of counterpart financing within the Global Fund: The current position put forward by Global Fund demands that Kenya meets the 20% minimum co-financing threshold. The committed towards this co-financing is ring-fenced towards individual priority program and can therefore only be used for HIV/AIDS, TB or Malaria. Moving forward it is recommended that the national government, MoH and The national Treasury advocates for a re-structuring of counterpart financing mechanisms within the Global Fund such that the co-financing commitment be allowed to fund a more integrated healthcare funding mechanism e.g. NHIF

rather than HIV/AIDS, Malaria and TB only that will not only be sustainable but will also impact the overall healthcare system.

Human resources for health (HRH)

This technical review demonstrates that, while there are deficiencies in HRH across the health sector in general, there are specific gaps within some of the priority health programs. Within the immunization program, there is hardly any documentation of the number and expertise of medical equipment technicians (METs) and it is unclear whether there are adequate numbers of METs in the country. Further, the credentials and expertise the METs who are currently employed by county governments is unclear. National and county governments need to systematically map out the human resource capacity (in terms of METs) to identify qualitative and quantitative skill gaps that may exist and implement systematic capacity building to increase capacity to service and maintain CCE. The mapping exercise should also develop a centralized data repository of the METs that should be linked to the wider HRH structure and reporting mechanisms within the county departments of health.

Service delivery, equitable coverage, outcomes and determinants

The review established that none of the priority health programs has fully achieved its respective treatment and/or service delivery targets. Importantly, there are wide inequalities in service delivery and coverage levels especially with regards to coverage of vaccines and immunization services across the counties. While this technical review did not find a comprehensive analysis of the drivers of low vaccine coverage in some counties, it is likely that the inadequate or untimely financing and procurement of vaccines as well as suboptimal demand creation contribute the low coverage. It is recommended that individual priority programs identifies counties that have low vaccine coverage and work closely with county governments to implement demand-creation interventions. This may include increased advocacy on the value of immunization as well as coordination with community health divisions at the county levels to enhance follow up of children who miss out on immunization visits. This recommendation will also apply to other priority health programs such as HIV/AIDS where there are marked disparities in the burden of HIV/AIDS across the counties.

Essential medical products, vaccines and technologies

The review showed that, while there are deficiencies in essential medical products and technologies across the health sector in general, there are specific gaps within some of the priority health programs. Within the immunization program, there are significant deficiencies in CCE infrastructure. Considering that a comprehensive cold chain expansion and replacement plan has already been developed by UVIS in collaboration with other stakeholders, this report recommends that the national and county governments uphold the commitment to fund the implementation of the plan.

In order to reduce Kenya's dependence on imported medical products and technologies, it is recommended that in the longer-term the national government explores local manufacturing options for medication, diagnostic test kits and vaccines. This will, in addition to reduce the

country's dependence on imported products, cushion the Treasury against loss of foreign exchange and price fluctuations in the international market. The Treasury has in the past failed to remit payment to GAVI on time due to reluctance to deplete its forex reserves especially when the Kenya Shilling has been weak compared to the US dollar. The pre-qualification by WHO of two local manufacturers (Lab & Allied and Universal Corporation Limited) to produce co-packed Oral Rehydration Salts and Zinc (ORS/Zinc) and sell to UNICEF demonstrates that local manufacturing of quality medications is possible in Kenya. This recommendation is contingent on positive results of studies looking into Kenya's competitive advantage in the pharmaceutical manufacturing sector.

Recommendations on Phase 2 of the proposed analytical activity on sustainable financing of priority health programs in Kenya

On the basis of insights gathered in this technical review, it is recommended that phase 2 of the proposed analytical activity on sustainable financing for priority programs in Kenya should focus on the following activities:

- Assessment of PFM structures in Kenya to identify bottlenecks in PFM in Kenya and design of interventions (some of which will be policy changes) to address them. These interventions may include but may not be limited to: review of the PFM Act of 2012 to explore possibilities of retaining functions within the health sector that impact on the public goods. These functions may include the financing and procurement of vaccines so as to leverage on economies of scale and negotiate for preferential prices on the vaccines; strengthening the capacity of national and county governments to implement the PFM Act; training of national and county government officials to strengthen their capacity to improve efficiencies in financial planning and budgetary processes so as to ensure timely flow of funds between and within the two levels of government, and budget execution.
- Technical assistance to the national and county governments to develop a framework to guide the implementation of functions within the healthcare sector that impact on the public good as described above; enhance governance and accountability related to procurement of medical products at the county government level (for products whose procurement will remain decentralized) as well as at national government level (for products whose procurement may be recentralized).
- Systematic mapping of Kenya's human resource capacity (in terms of METs), to identify qualitative and quantitative skill gaps that may exist and implement systematic capacity building to increase Kenya's capacity to service and maintain CCE. The mapping exercise should result in the development of a centralized database of the number and expertise of METs in Kenya. This database should be updated regularly and used by to inform the planning of ongoing efforts of improving the CCE infrastructure in Kenya by replacing old gas driven refrigerators with modern solar driven and ice layered ones. This will be important since the success of the CCE infrastructure improvement efforts is contingent on the availability of adequate numbers of METs who are trained to service and maintain modern CCEs.

- Technical assistance to MoH and county departments to conduct evidence based planning, linked to budgeting and monitor and report budget execution for immunization. Additionally, support to better package existing evidence and use for advocacy towards increased government spending on immunization and health in general will go a long way towards increasing domestic resources for immunization.

- An analysis of the financing of the wider health sector (beyond the priority health programmes) to identify services and programs (if any) whose funding may yield greater value if they are reallocated towards the priority health programmes. This may identify opportunities to raise finances to bridge the funding gaps that will result from reductions in international financing.
- Developing standardized methodologies for conducting studies related to the financing of health programmes. These methodologies will include protocols for conducting costing studies, efficiency assessments etc. The adoption of standardized methodologies by the multiple stakeholders working in the healthcare space will facilitate the comparison of results across studies as well as provide a consistent approach to the generation of evidence to inform policy making.

1. Introduction

Kenya has recorded sustained economic growth over the past few years and was classified as a LMIC in 2014. With this reclassification, Kenya will progressively become ineligible for international support towards its priority programmes. The country therefore needs to plan for the transition of its priority programs away from international support and ensure that adequate financing and human resources are available to sustain these programmes and, if need be, that there is smooth integration of these programmes in to the health system. Without sufficient and timely planning for alternative mechanisms to support these priority programmes, the gains made so far may be lost.

Considering that a significant proportion of financing for priority programs in Kenya currently comes from donors, the graduation of these programmes from international support has a significant financial implication to Kenya. To support countries that are on the transition path, the Global Alliance for Vaccines and Immunization (GAVI) Alliance is supporting countries to conduct detailed country assessment of readiness to graduate, transition appraisals and analytical work to inform the transition[2].

This study forms part of GAVI's support to Kenya to plan for the transition of its priority programmes. Although GAVI's primary support is to the immunization programme, considering that all the other priority programmes i.e. HIV/AIDS, Malaria, Tuberculosis (TB) and reproductive health / family planning (RH/FP) face similar challenges in terms of sustainable financing, this study investigated all five programmes and provides comprehensive health financing and health systems assessment of these programmes.

The technical review has a dual audience – policy makers at national and county governments in Kenya on one hand and technical-level personnel on the other. The executive summary is specifically targeted at the policy makers while the rest of the report (including the details in the annex) is aimed at technical personnel who are working in the healthcare space in Kenya. This report is envisaged to provide technical personnel with a synthesis of current status of priority programs in terms of sustainable financing as well as a collection of insights from the studies that have been done (or are ongoing) in this field. Further, the review outlines completed and ongoing work of relevance to the five programmes with regards to sustainable financing so as to guide future work and avoid duplication.

[2] Saxenian et al., 2014. Overcoming challenges to sustainable immunization financing: early experiences from GAVI graduating countries. https://academic.oup.com/heapol/article/30/2/197/622945/Overcoming-challenges-to-sustainable-immunization

2. Objective and scope

This work had two broad objectives. The first was to conduct an assessment of five major priority programs in Kenya. The second was to leverage on insights gathered in the assessment to identify bottlenecks in the transition of priority programs towards sustainable financing. Further, the second objective was to propose interventions (areas of future work) across the entire health system that will address these bottlenecks and inform the national and county governments efforts towards sustainable financing of the priority programmes. While transition planning has a strong health financing aspect, a synthesis of the current status of these priority programs from a health system perspective is important in several respects. First, it provides a wider assessment of the priority programs especially with regards to health systems building blocks, a prerequisite for smooth transition. Secondly, a synthesis of the current status of priority programs highlights opportunities to collaborate and leverage on existing resources to better support the government to put systems for sustainable financing mechanisms.

Sustainability has been defined in relation to health programs as the continuing ability of a project to meet the needs of its community[3]. Sustainable healthcare financing has been referred to as the ability of all stakeholders to make health care viable and operational for a long period of time without collapsing, thus, ensuring perpetual existence[4]. This technical review has refered to sustainable financing of priority health programs as the ability of these programs to be funded in ways that allows for their perpetual ability to offer health services to Kenyans. With this working definition, this review had hinged the sustainability of the priority health programs on their funding being replenishable from domestic mechanisms such as tax revenues rather than being dependent on external donor financing that is often not predictable or assured.

3. Methodology

Data were sourced from:

- Reports and publications from the government, donors and their implementing partners working within each of the five priority programs.
- Policy and strategy documents developed by the Ministry of Health (MoH)
- Datasets that are in the custody of relevant MoH program and departments
- Published articles on sustainable financing of health programs

[3] Rogers, P.P., Jalal, K.F. and Boyd, J.A. (2008), An Introduction to Sustainable Development, Earth scan, London.

[4] Owusu-Sekyere E., Bagah D., Towards a Sustainable Health Care Financing in Ghana: Is the national Health Insurance the Solution? Public Health Research

A list of the reports and publications reviewed in the development of this technical report is provided in **Annex 1**. A considerable number of these reports and publications were not available online or on open access platforms. Rather, these reports and publications are in the custody of specific officers within the government, donors and implementing partners. In this regard, the information/data collection process involved meeting with these officers and requesting relevant reports most of which were shared with the authors on email while some were only available as hard copy documents.

Key informant interviews (KIIs) were conducted with government officials, donor agencies and their implementing partners (listed in **Annex 2**). Data analysis was guided by the World Health Organization (WHO) Health Systems Framework[5] and the World Bank Group Guide on Health Financing Assessment[6]. Data from Kenya was compared to data from other countries especially those that are classified as lower middle income countries.

The WHO Health Systems Framework outlines six 'building blocks' that together interact to realize the goals of a heatlh system. These include: service delivery; health workforce; information; medical products, vaccines and technologies; financing; and leadership and governance. In adopting the WHO Health Systems Framework, this technical review sought to (i) define the desirable attributes of a health system and (ii) systematically identify gaps within the priority health programs that ought to be addresses by the interventions (areas of future work) proposed by this technical review. Assessement of health finacning systesm was guided by the Kutzin framework, which hihgilights three key functions: (i) Revenue collection; referring to the process through which health systems receive money from households and organizations; (ii) pooling: referring to the accumulation and management of revenues to ensure that the risk of paying for health care is borne by all members of the pool and not by each contributor individually. It embodies the insurance function within a health system; and (iii) purchasing-the process by which pooled funds are paid to providers to deliver a set of health interventions.

Study Limitations

The technical review was limited by the accessibility of some reports from MoH or its divisions/programs responsible for the five priority programs. Some of the key reports that should have been reviewed here were not reviewed because they had not been formally launched by the time of developing this report.

[5] http://www.who.int/healthsystems/strategy/everybodys_business.pdf
[6] Gottret, P., and G. Schieber. 2006. Health Financing Revisited: A Practitioner's Guide. Washington, DC: World Bank. Available at: http://siteresources.worldbank.org/INTHSD/ Resources/topics/Health-Financing/HFRFull.pdf

Secondly, this review was challenged by the different studies have adopted different methodologies which precludes direct comparisson across studies. Therefore, this technical review makes direct comparissons across studies only where methodological similarities allow.

Finally, the lack of data on some aspects of health financing limited this technical review. For instance, apart from the HIV/AIDS program, data on the predictability of funds for the other four priority programs was to a large extent lacking. This lack of data also extended to other aspects of health financing such as efficiency in spending and contingency financing.

4. Background

Overview of country context

Socio-demographic and health context

Kenya's population has increased steadily to reach 46 Million: Kenya's population is currently estimated at 46 million[7] (**Table 1**). According to the Kenya national Bureau of Statistics (KNBS), Kenya's population increased by approximately one million people per year[8] , from 28.7 Million in 1999 to 43 Million in 2014. Assuming that the country maintains the current growth rate of 2.9% per annum, KNBS projects that Kenya's population will increase to 77 million by 2030.

Kenya has experienced improvements in key demographic and health indicators: Infant mortality rate has declined from 77.3 deaths per 1000 births in 1999 to 39 deaths per 1000 births in 2014. Over the same time, life expectancy at birth (LEB) has increased from 56.6 in 1998 to 62 in 2016 and total fertility rate (TFR) has reduced from 5 in 1998 to 4.3 in 2016. Stunting has also declined significantly from 38% in 1998 to 26% in 2014 (**Table 1**).

Table 1. Basic demographic indicators.

	Year				
Indicator	**1998**	**2009**	**2014**	**2015**	**2016**
Population (millions)	28.7	38.6	43		46*
Inter-censal growth rate	2.9	2.9	2.9		
Percent residing in urban areas	19.5*	23.2*	25.2*	25.6*	26.1*
Total fertility rate	5	4.8	3.9		4.3*
Maternal mortality ratio		520	362		
Infant mortality rate	77.3	54	39	35.5**	

[7] http://www.who.int/countries/ken/en/
[8] http://www.knbs.or.ke/index.php?option=com_phocadownload&view=category&id=125:kenya-demographic-health-survey-2014&Itemid=599

Life expectancy at birth	56.6	58	58	62*
Stunting	38***		26	

Adapted from the 2014 Kenya Health and Demographic Survey**;** *Data obtained from the World Bank Group's World Development Indicators; **Data obtained from the World Health Organization's Global Health Observatory; ***Data from 1998

Kenya adopted a new policy on population and national development in 2012 which sets several population and national development targets for 2030[9]. Kenya's progress against these targets varies across specific demographic indicators. Population growth rate has remained constant at 2.9% per annum since 1999 which is approximately twice as high as the target set out in the policy. On the other hand, there is significant progress towards attaining the LEB, which has increased from 58 years in 1999 to 62 in 2016.

Economic context

Kenya has experienced sustained economic growth over the past few years and is classified as lower-middle income country (LMIC): Kenya has recorded significant economic growth since its independence. The country's gross domestic product (GDP) has increased from USD 926.5 Million in 1963 to USD 70.5 Billion in 2016. Over the past 10 years, Kenya's GDP grew at an average annual rate of 5.2%. This growth was relatively volatile between 2007 and 2012 compared to more recent years where the growth has been consistently above 5%[10] (**Figure 1**). Over the same period, the country's GDP per capita increased from USD 857 to USD 1377. The country is classified as the 71st largest economy in the world and the 8th largest economy in Africa behind South Africa, Nigeria, Angola, Morocco, Algeria, Egypt, and Sudan[11].

[9] The policy goals are: reduce the natural growth rate of the population from 2.5 percent in 2009 to 1.5 percent by 2030; reduce the TFR from 4.6 children per woman in 2009 to 2.6 children per woman by 2030; improve LEB for both sexes from 57 years in 2009 to 64 years by 2030.

[10] http://data.worldbank.org/country/kenya#wbboxes-source-gep_chart2

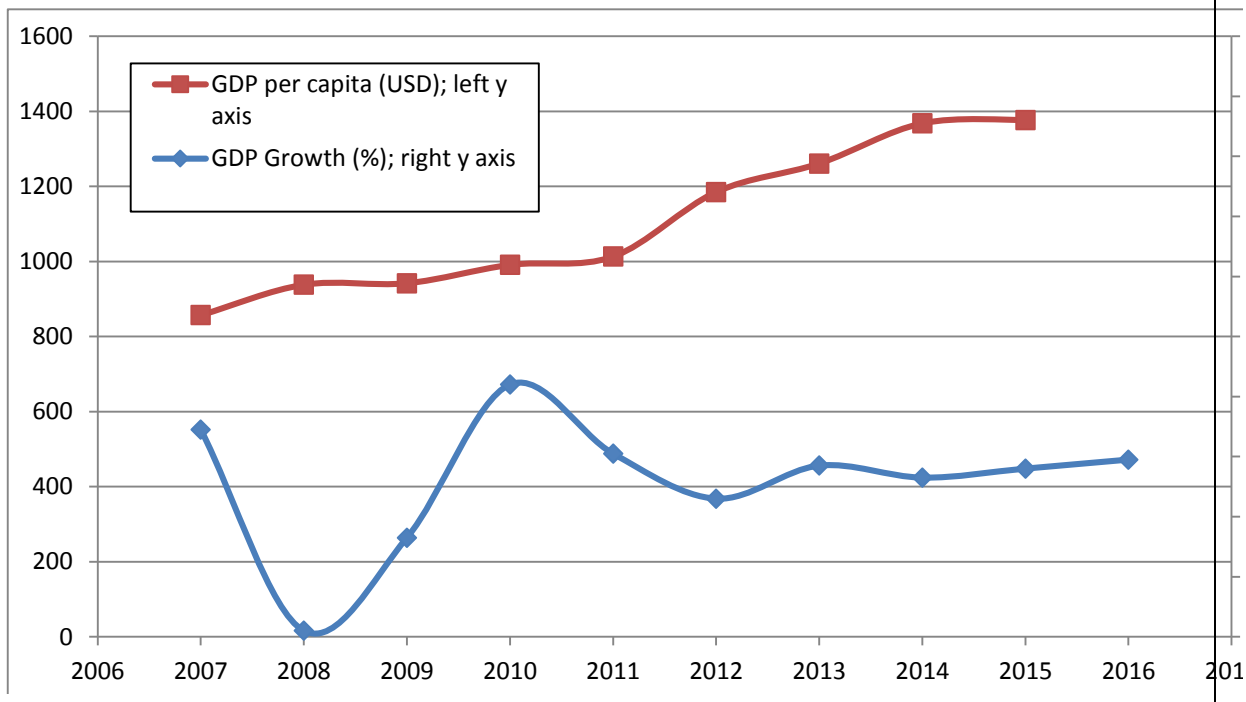


Figure 1. GDP growth and GDP per capita trends in Kenya (2006 – 2016)

Kenya's economy is projected to keep growing over the next few years. The World Bank Group projects that the country's economy will grow by an average of 6% between 2017 and 2019. The key drivers of this growth will include: currency stability, declining inflation rates (**Figure 2**), low fuel prices, a growing middle-class and rising incomes, a surge in remittances from diaspora, and increased public investment in energy and transportation[12].

[12] http://www.worldbank.org/en/country/kenya/publication/kenya-economic-update-economy-strong-challenging-global-environment

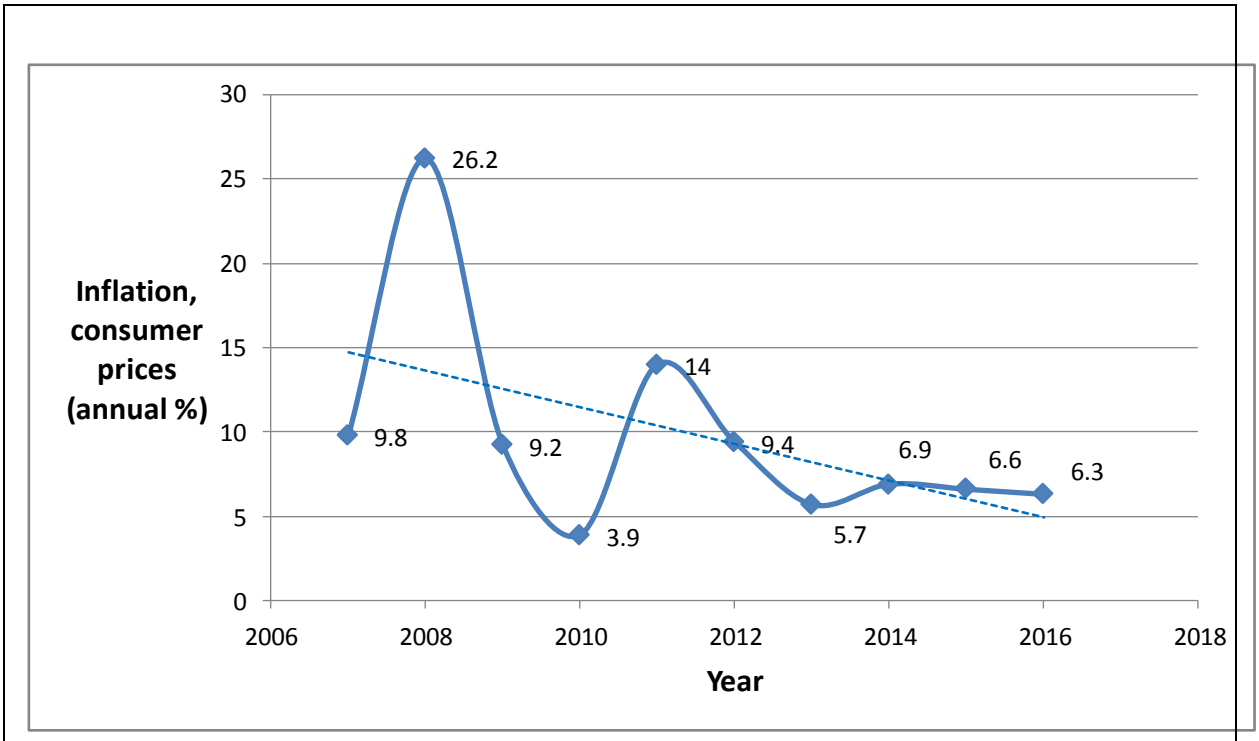


Figure 2. Temporal trends in inflation in Kenya (2006 – 2016)

Kenya has achieved mixed results in reducing poverty levels and other social determinants of development. On one hand, in line with the strong economic growth, poverty rates have declined. The percentage of Kenyans living in poverty declined from 47% in 2005/06[13] to 39% in 2012/13[14]. On the other hand, inequality remains a challenge. The distribution of the 39% of Kenyans living in extreme poverty is not even. There is a wide rural-urban split in poverty levels. In the remote, arid, sparsely populated north-eastern parts of the country (e.g. in Turkana and Mandera), poverty rates are above 80%[14].

Macrofiscal context

Kenya government's expenditure has consistently exceeded its revenue: Kenya government's revenue as a share of GDP has been stable but insufficient to match the government's expenditure (**Figure 3**). In 2014 government revenues were 20% of GDP; much lower than the General government Expenditure (GGE) which was 27.4% of GDP and close (but lower) than the median for lower middle income countries (28.5%). Overall, levels of

[13] International Monetary Fund. (2014, October 31). 2014 Article IV Consultation - Staff Report, Press Release; and Statement by the Executive Director for Kenya. Retrieved February 20, 2017 from imf.org: https://www.imf.org/external/pubs/ft/scr/2014/cr14302.pdf

[14] World Bank Group. Kenya—Country Assistance Strategy FY2014-18.

government spending are higher than revenue generation and the country currently has a budget deficit of approximately 7.5% of GDP and an accumulated debt of about 45% - 50%[15].

In 2014 tax revenues contributed about 18% of GDP – a much higher proportion than in neighboring countries such as Tanzania, Rwanda and Uganda and other lower middle income countries such as Indonesia and Bangladesh (**Figure 3**). The Kenya Revenue Authority is implementing reforms (such as digitizing of tax filing processes as well as increasing the penalties charged to persons and organizations that default on their tax payments) to strengthen revenue collection, which is expected to yield about 0.2% of GDP in additional revenue. Nevertheless, national government revenue is only expected to increase to 21% of GDP by 2019 (IMF 2016). This data suggests that over the coming years government's expenditure is likely to continue to exceed revenue and thus result in increasing budgetary deficit.

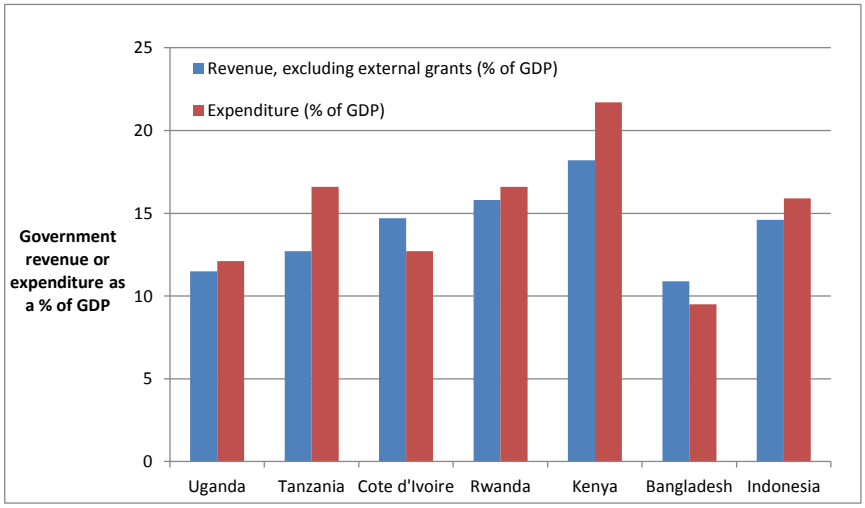


Figure 3. Kenya government's revenue and expenditure as a percentage of GDP relative to neighboring countries and other lower middle income countries (2014).
Data source: World Bank Group.

[15] The International Monetary Fund (IMF) recommends that a "prudent" debt to GDP ratio is 60% for high-income or developed countries and 40% for low-and middle-income or developing countries.

The Kenyan Health Sysytem

Kenya recently changed to a devolved governance structure. The 2010 Kenya Constitution[16] devolved the responsibility of health service delivery for primary and secondary health services to 47 county governments. The national government is responsible for policy and health service provision in national referral and teaching hospitals, the highest level of hospitals in the public health domain. The national government also coordinates resource mobilization efforts and provides technical oversight over the priority national programs. The county governments, on the other hand, are tasked with healthcare service delivery aspects. **Table 2** outlines the functions and responsibilities within the Kenyan health system for national and county governments.

Table 2. Constitutional allocation of health-related functions between the national and county governments

National government functions	County governments functions
Health policy	County health facilities and pharmacies
Health financing	Licensing and control of agencies that sell food to the public
Planning and budgeting of national health services	Disease surveillance and response
Quality assurance and standards development	Veterinary services (excluding regulation of veterinary professionals)
Public-private partnerships in health	Cemeteries, funeral homes, crematoria, refuse dumps, solid waste disposal
Monitoring and evaluation of health outcomes	Public health and sanitation
national referral hospitals	Monitoring and evaluation of health outcomes
national Public Health Laboratories	
Services provided by Kenya Medical Supplies Agency (KEMSA), national Health Insurance Fund (NHIF), Kenya Medical Research Institute (KEMRI) and Kenya Medical Training College (KMTC)	
Ports, borders and trans-boundary areas	
Major disease control (Malaria, TB, Leprosy)	

Kenya has a dual healthcare service delivery model: Health services in Kenya are delivered through public and private-for-profit and not-for-profit health facilities. According to the Kenya Master Facility List[17], the official government registry of health facilities, there are a total of 9696 health facilities in Kenya. Approximately 4616 and 5080 of these fall within the public and private sub-sectors respectively. The public healthcare delivery system is structured and governed by the national and county governments.

[16] http://www.kenyalaw.org/lex/actview.xql?actid=Const2010
[17] http://kmhfl.health.go.ke/:%20Master%20Facility%20List#/home

Suboptimal service delivery and wide disparities in access to health facilities characterize the health system. Only 63% of Kenyans live one hour away from a government (public) health facility[18], and longer distances to a health facility is a significant driver of decreased demand for healthcare in the country[19]. Wide disparities also exist: while Mombasa and Nairobi Counties had 134 and 124 health facilities per 100 square kilometers, half of the counties in Kenya had less than two health facilities per 10,000 people and less than 4.2 facilities per 100 square kilometers. Staff absenteeism, a proxy measure for quality, varied greatly across counties in Kenya - from 7% in West Pokot to 65% in Trans-Nzoia. The percentage of clinicians in public and private facilities who correctly diagnosed seven different conditions ranged from 64% in Kilifi to 84% in Makueni. Considering that the quality of care is significantly dependent on clinicians' ability to accurately diagnose patients, these data suggest that there are both qualitative and quantitative deficiencies in human resources for health in Kenya.

Health Financing

Overview of health financing system and government health expenditure

Kenya government's expenditure on health as a proportion of the total government expenditure has been declining over time: Funds to finance healthcare in Kenya come from three major sources: the government, households, and donors. According to the 2012/13 national Health Accounts[20] the private sector (largely represented by households) is the major financier of healthcare in Kenya, contributing 40% of THE in 2012/13, up from 37% in 2009/10. Preliminary estimates of the 2015/16 NHA show that an increase in public sector share of financing, from 33.5% in 2012/13 to 37%, while private spending declined from 40.6% to 39.6%.

An analysis of recent temporal trends in Kenya's GDP per capita and the government's expenditure in health reveals that increases in economic growth has not resulted in increased proportions of expenditure allocated towards healthcare. Whereas Kenya's economy has grown steadily in recent years, government's healthcare spending as a percent of GDP has decreased. The government's expenditure on health as a proportion of the total government expenditure has also decreased from 8.0% in 2001/02 to 6.1% in 2012/13 despite Kenya's sustained economic growth (**Figure 4**) and is projected to decrease further to 4.4% by 2019[21]. Relative to

[18] https://www.healthpolicyproject.com/pubs/479_KenyaPETSCountyReadinessFINAL.pdf
[19] Noor, A. M., A. A. Amin, P. W. Gething, P. M. Atkinson, S. I. Hay, and R.W. Snow. 2006. "Modelling Distances Travelled to Government Health Services in Kenya." Tropical Medicine & International Health 11(2): 188–196.
[20] national Health Accounts (2012/2013). MoH. http://www.healthpolicyproject.com/pubs/523_KenyaNHA.pdf
[21] Kenya: Vaccines and Immunization Financing Review towards Predictable and Sustainable Immunization Programme Financing. September 2014.

its total expenditure, the government's health-care expenditure falls far below the 15% target set by the Abuja Declaration[22] as well as the average of LMICs (6.9%)[23].

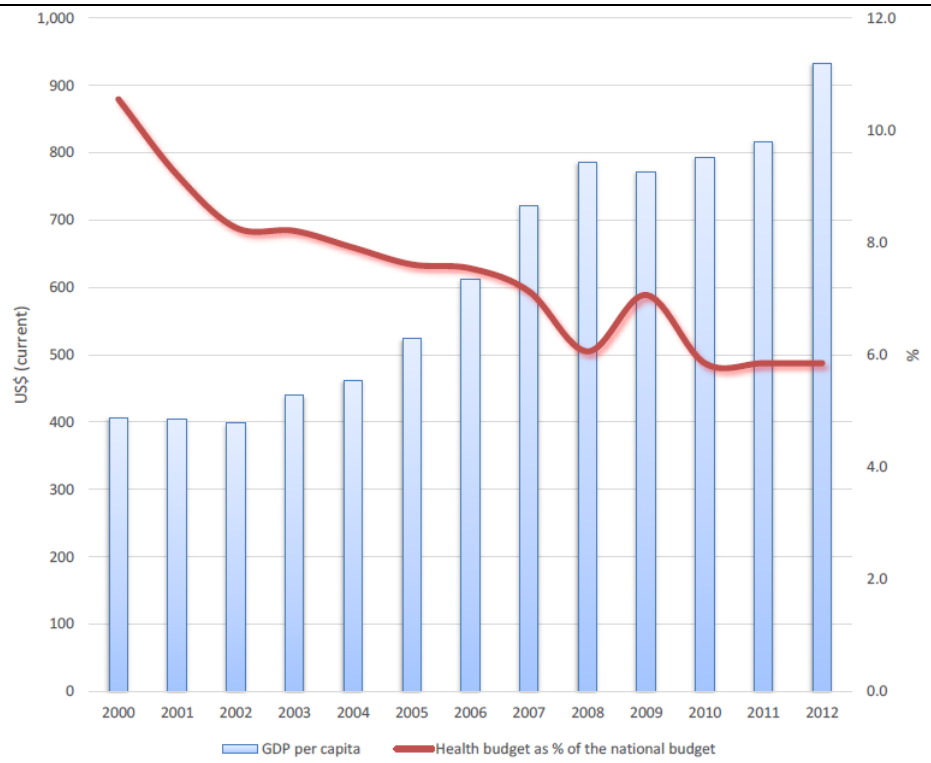


Figure 4. Temporal trends in Kenya's GDP per capita and the government's expenditure in health

While total health expenditure (THE) per capita has increased consistently from USD 51.2 in 2001/2002 to USD 59.5, USD 66.3, USD 77.4 and 78.6 in 2005/2006, 2009/2010, 2012/2013 and 2015/16 respectively, it should be noted that a significant share of THE is borne by households largely through out-of-pocket (OOP) payments (**Figure 6**.). OOP payments push about half a million Kenyans into poverty each year[24], and many more are trapped into poverty due to health care payments.

[22] A pledge made by African Union countries in April 2001 to dedicate at least 15% of their annual budgets to the health sector.
[23] http://www.who.int/gho/health_financing/en/
[24] Chuma and Maina (2012). Catastrophic health care spending and impoverishment in Kenya. BMC Health Services Research.

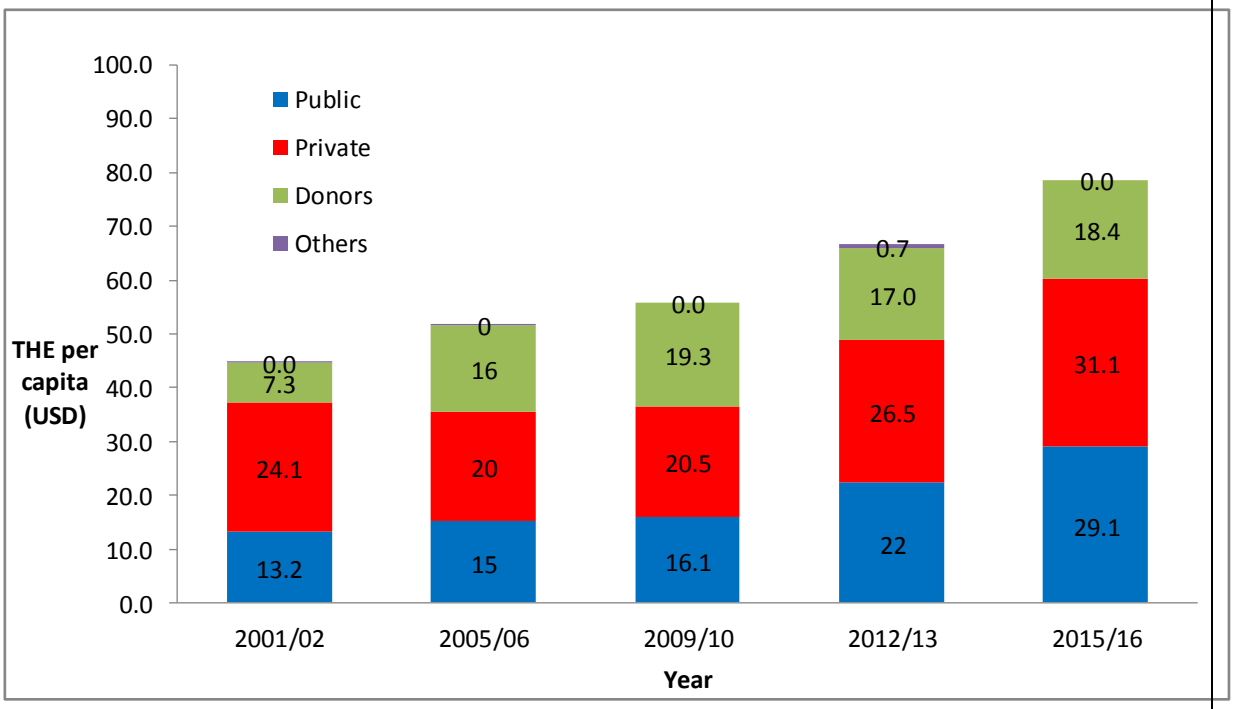


Figure 5. Total health expenditure (THE) per capita (USD) per fiscal year. THE is stratified by source across the fiscal years when the national health accounts (NHA were conducted. The numbers in yellow text boxes represent the total of THE per fiscal year.
Data source: NHA Reports. Data for 2015/16 is obtained from the preliminary NHA 2015/16 report.
Authors' own illustration.

Kenya's health expenditure is comparable to other LMICs (**Figure 6**). Health expenditure per capita in Kenya is at par with the average for lower middle income countries despite Kenya's income being slightly lower than the average income of lower middle income countries. .

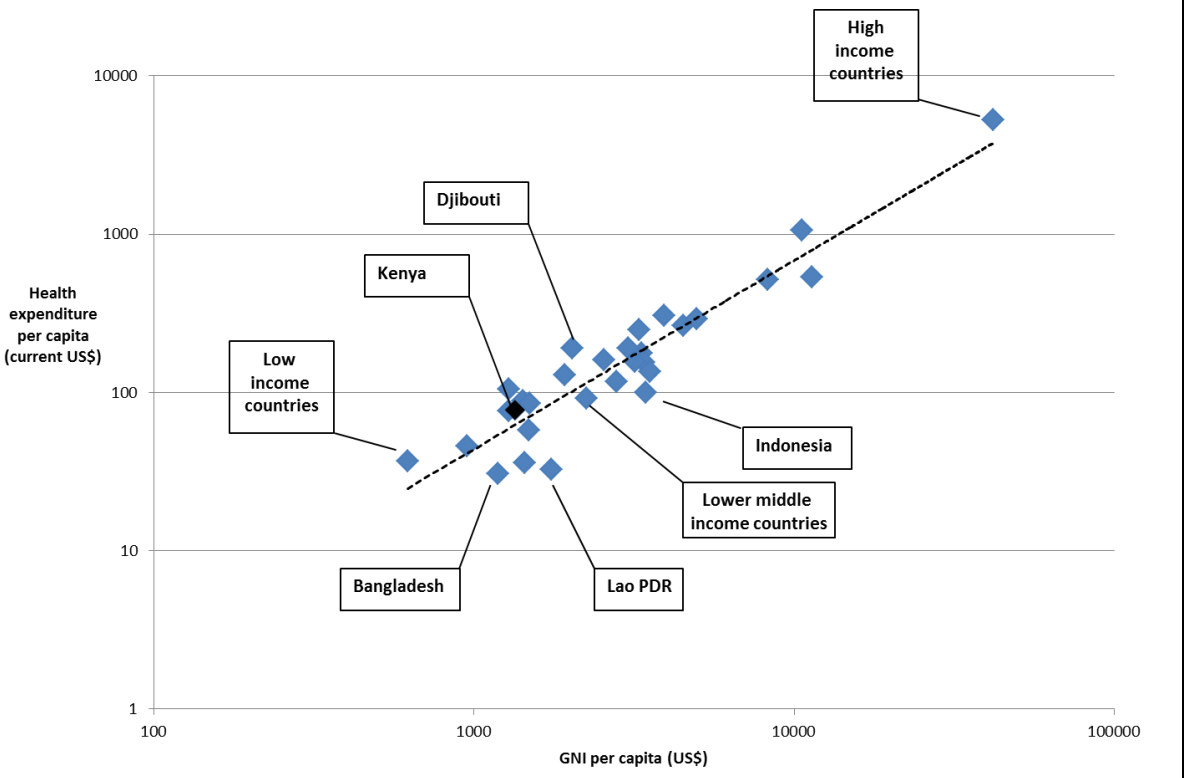


Figure 6. Health expenditure per capita versus GNI per capita. All data refer to 2014. Data sourced from the World Development Indicators.
Author's own illustration.

Revenue collection

Government tax revenue and government spending on health

The government's tax revenue is generated from value added tax; personal income tax; corporate tax; import and export duty; and fuel levies. Government's Health Expenditure (GHE) as a proportion of the total government's budget declined between FY2001/12 and FY2009/10 before increasing in FY2012/2013 (**Table 3**). However, absolute terms, GHE has consistently increased from USD 412 billion in FY2001/02 to USD 916 million in FY2012/13 (**Table 3**). Despite this increase, government allocation towards health as a percentage of GDP has only reached approximately 2.2%, countries that have made progress towards UHC spend public funds at around 5% of GDP. The inadequacy of funding is also reflected in the five priority programs, and each is characterized by significant funding gaps despite having considerable financial support from donors. The challenges related to adequacy of funding are further exacerbated by the unpredictability of financing as well as the lack of contingency financing. The latter two challenges are highlighted later on in this report under the immunization programme.

Table 3. Selected health expenditure indicators.

	Year				
Indicator	**2001/02**	**2005/06**	**2009/10**	**2012/13**	**2014**
Total government expenditure (USD millions)	5,154	10,478	13,363	15,030	-
GHE as % of total government expenditure	8.0	5.2	4.6	6.1	-
Public funds spent on health as a % of GDP	2.1	1.8	1.6	3.3	3
GHE in absolute value (USD millions)	412	544	614	916	
OOP payments as a percent of total healthcare spending	51.1*	35.9*	29.6*	32*	26.1*
Donor contribution as a percent of THE	16.4	31.0	34.5	25.6	-

Relative to other African countries, the Kenyan GHE relative to its total expenditure is in the median range i.e. 6.1% (data from 2012/13) compared to Africa's average of 9.8% (data from 2014). In terms of the government expenditure on health as a proportion of GDP, Kenya ranks in the median range and is only slightly above Africa's average of 3.0% (**Figure 8**), outperforms some lower middle income countries such as Ghana but compares poorly to others such as Lesotho.

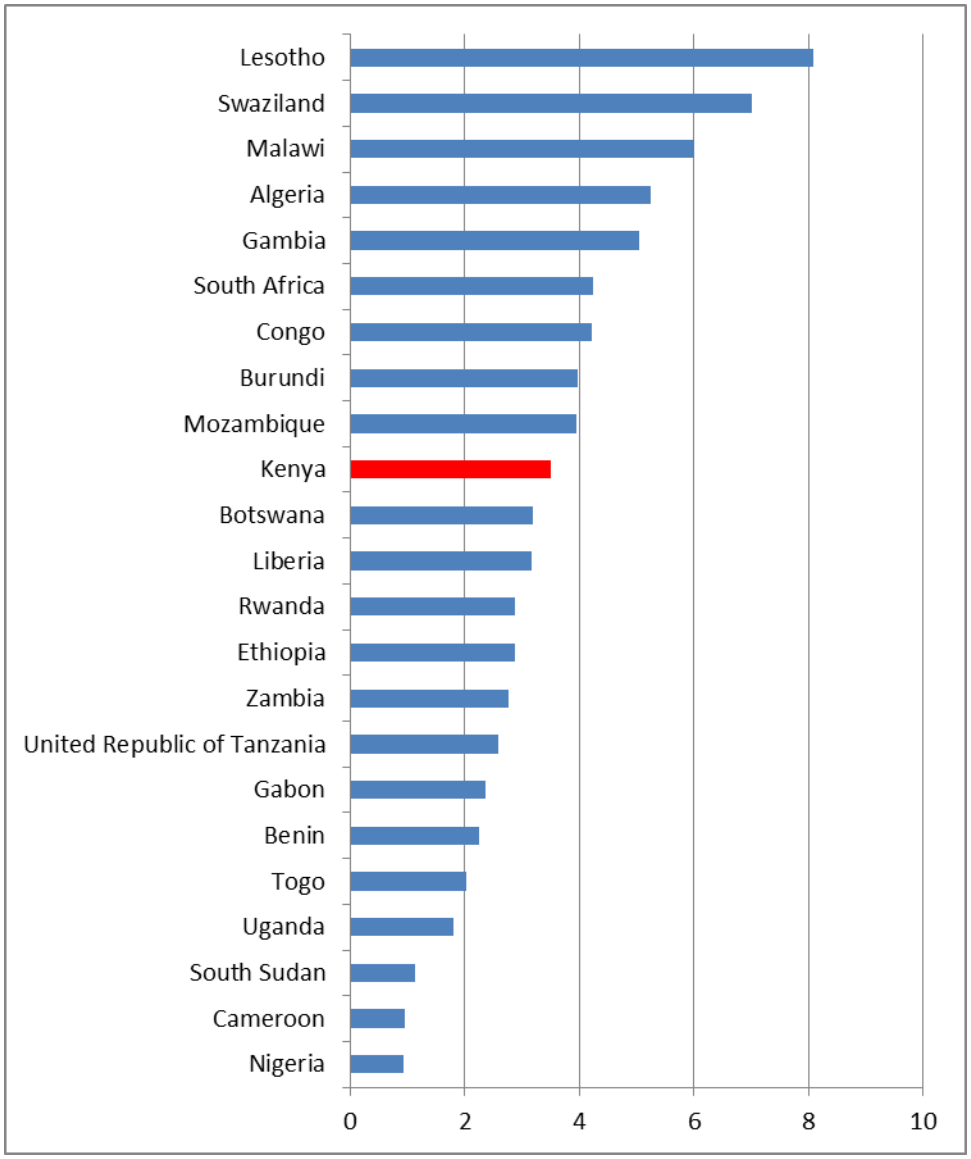


Figure 8. General government expenditure on health as % of GDP in 2014.
Data source: WHO

Out-of-pocket payments

OOP payments have declined by close to 40% over the past 15 years but still represents a significant proportion of THE: In Kenya, OOP payments as a proportion of total healthcare expenditure have declined markedly from 50% in 2010 to 26% in 2014 (**Figure 9**). Relative to other lower middle income countries, Kenya has one of the lowest proportions of OOP expenditure on health relative to THE.. According to the NHA reports, OOP payments as a proportion of total healthcare expenditure has remained fairly constant at 25.1% in FY 2009/10 and 26.66% in FY2012/13. Data from the World Bank group suggests that OOP has declined

from 50% in 2010 to 26% in 2014[25]. Despite these disparities in temporal trends, it is clear that OOP payments still represent a significant part of THE and continues to pose a risk to households. Relative to other lower middle income countries, Kenya has one of the lowest proportions of OOP expenditure on health relative to THE.

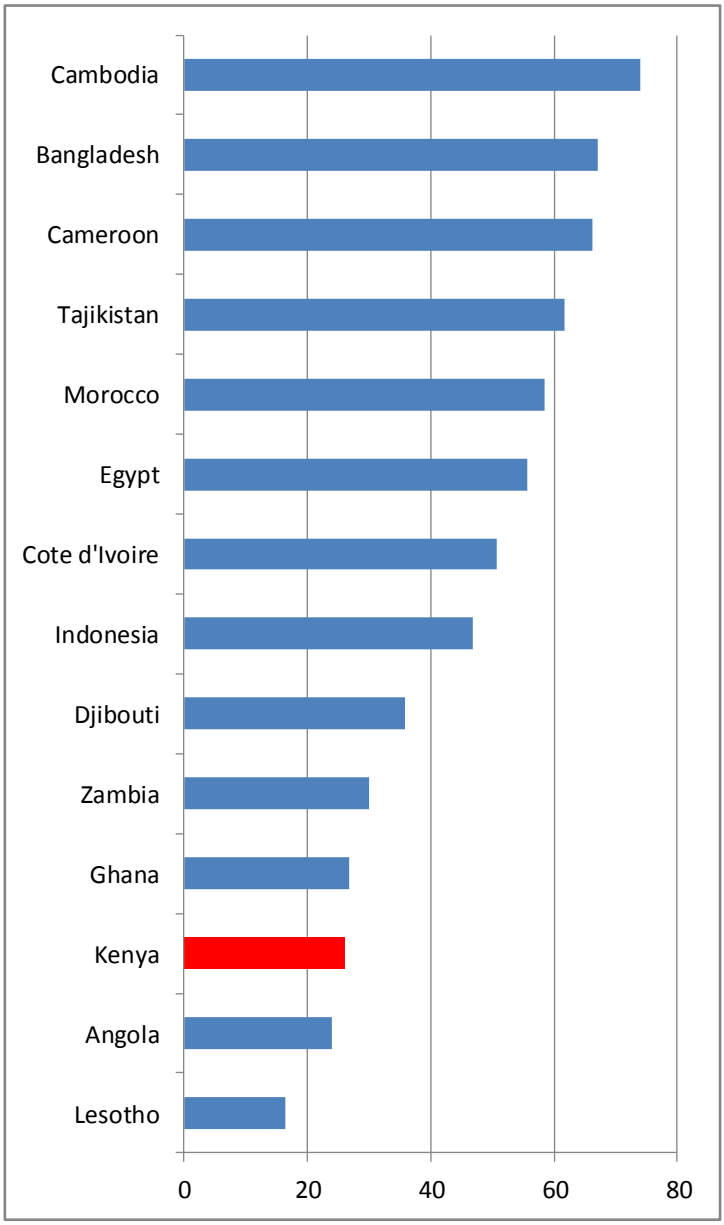
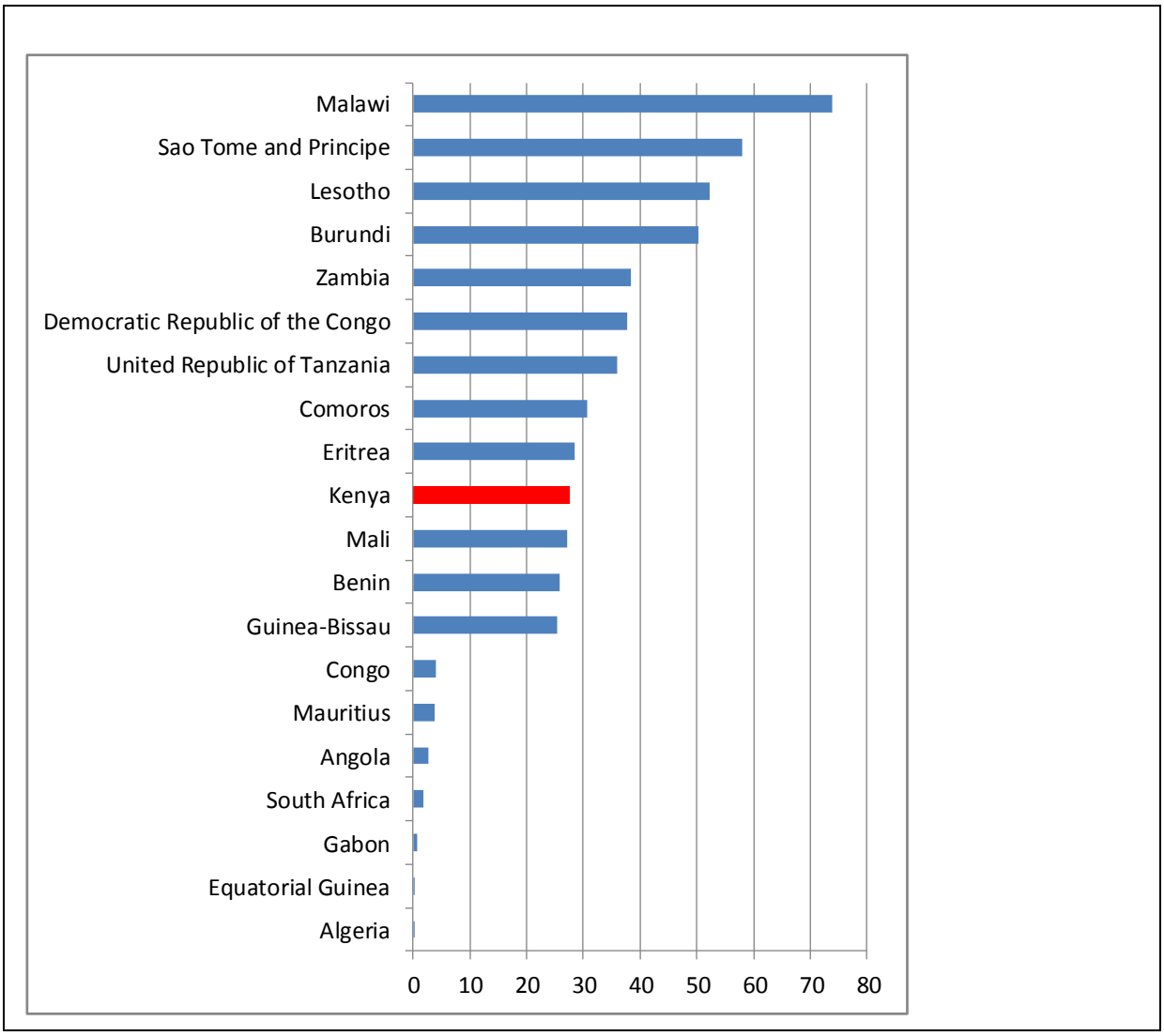


Figure 9. Out-of-pocket expenditure on health as a proportion of total expenditure on health in 2014
Data source: The World Bank Group

[25] It is worth noting that there is a significant difference in the estimation of OOP in 2010 made by the national Health Accounts (25.1%) and the World Bank Group (50%), largely due to methodological differences.

Donor funds

Donor funds represent a significant share of THE in Kenya and half of all donor funds are spent on HIV/AIDS: Donor funds represent a significant share of THE in Kenya (**Table 5**). Notably, 52% of all the donor funds spent on health in Kenya were spent on HIV/AIDS[26]. Spending on HIV/AIDS accounted for 19% of THE and 1.3% of nominal GDP. Donor contributions are either channeled through the government or directly managed by development partners. The proportion of donor funds that are off-budget declined from 29% to 19% of the current health expenditure (CHE) in FY2009/10 and FY 2012/13 respectively. While off-budget donor financing contributes towards service delivery, such off-budget financing may undermine the government's strategic prioritization and future sustainability of health programmes. Relative to other African countries, the proportion of THE that was funded by donors in Kenya in 2014 (27.5%) was in the median range and only slightly above Africa's average of 25.6% (**Figure 10**).



[26] https://www.healthpolicyproject.com/pubs/523_KenyaNHA.pdf

Figure 10 External resources for funding for health as % of total expenditure on health 2014. Data source: WHO[27]

Pooling of health care resources and allocation mechanisms

Health financing in Kenya is fragmented. Prior to the devolution, the MoH represented the largest resource pooling mechanism accounting for 32% of current health expenditure (CHE)[28]. Following the devolution, county governments hold the largest pool of government funds for health. In FY 2016/17 the national budget allocation to the health sector was KES 60.27 billion while the county governments' allocation to health was KES 92 billion[29]. However, county level funds remain fragmented as each county is responsible for its own service provision and there are no mechanisms to pool risks across the counties. Budget execution at county level is approximately 70% implying that the actual amount of funds spent on healthcare is lower than the figures presented in the national and county Budget Analysis Report[30]. Other resource pooling mechanisms in Kenya include the NHIF and private insurance firms. In FY2012/13, only 13.9% of CHE was channeled through these two risk pooling mechanisms[20].

Government funds are fragmented into 48 pools. Figure 11 illustrates the various pools. government budgetary allocations are held in 48 pools, i.e. the national pool, for services purchased through the MoH and 47 county pools. At both levels of government, there are no guidelines on minimum budgetary allocations to the health sector for purposes of predictability of resources available at any one time. In the contrary, this has been left to the annual budgeting cycle processes, which are largely influenced by historical budgets with some adjustment for inflation. In addition, the administrative arrangements of the risk pools promote further fragmentation in form of line budget items, rather than consolidation. International experiences suggest that UHC is best achieved with less fragmentation. However, the devolved system of government comes with challenges of high degree of fragmentation[31], which may be challenging to address as these arise due to the constitution.

The NHIF operates sub-pools, some with different benefit packages and with no clear mechanisms for cross-subsidization. Similarly, the NHIF funds are split into sub-pools targeting different populations, sometimes with varying benefit packages namely: the general scheme comprising of the mandatory contributions from the formal and voluntary members from the informal sector; government sponsored insurance programme for elderly people and

[27] http://apps.who.int/nha/database/Key_Indicators/Index/en
[28] 2012/2013 Kenya national Health Accounts
[29] http://www.healthpolicyplus.com/ns/pubs/6138-6239_FINALnationalandCountyHealthBudgetAnalysis.pdf
[30] https://www.healthpolicyproject.com/pubs/532_FINALnationalandCountyHealthBudgetAnlysis.pdf
[31] For example, 10 counties have a population of less than 400,000, which is too small for a social health insurance pool.

persons with severe disabilities; the Health Insurance Subsidies to the Poor (HISP), and the civil servants scheme. All NHIF members access a similar package with the exception of the civil servants' scheme. Neither the general scheme nor the civil servants scheme receives government subsidies, the contributions are fully covered by the registered beneficiaries and the NHIF funds its operational costs from the contributions. The HISP scheme is a fully subsidized pilot scheme, targeting poor families with orphans and vulnerable children, on the cash transfers programme, under the social protection secretariat. Experiences in Thailand and elsewhere have demonstrated the difficulties of harmonizing covers targeting different populations once introduced, particularly where this amounts to reducing the benefits of one group.

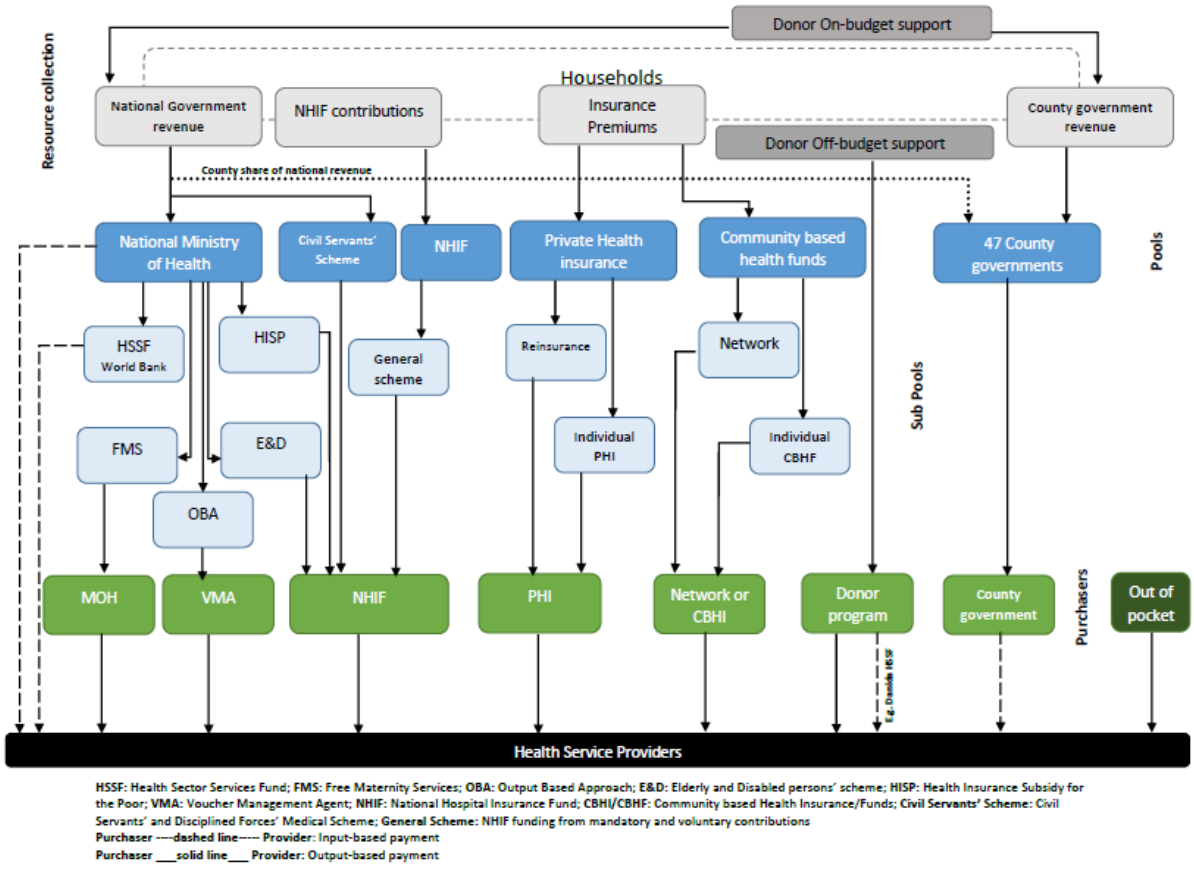


Figure 11. Illustration of the current source of funds and risk pooling arrangements

County governments are allocating a greater share of their budget to health. County governments' health sector budgets have increased from KES 42.1 billion in FY 2013/14 to KES 92 billion in FY 2016/17. According to the 2016/17 national and county budget analysis, county governments allocated KES 2,020 per person towards health in the 2016/17 financial year (**Figure 12**), compared to KES 1317 per capita by the national government. On average, county governments' health budget, as a percent of total county budgets, increased from 23.4% in FY 2015/16 to 25.2 % in 2016/17 (**Figure 13**).

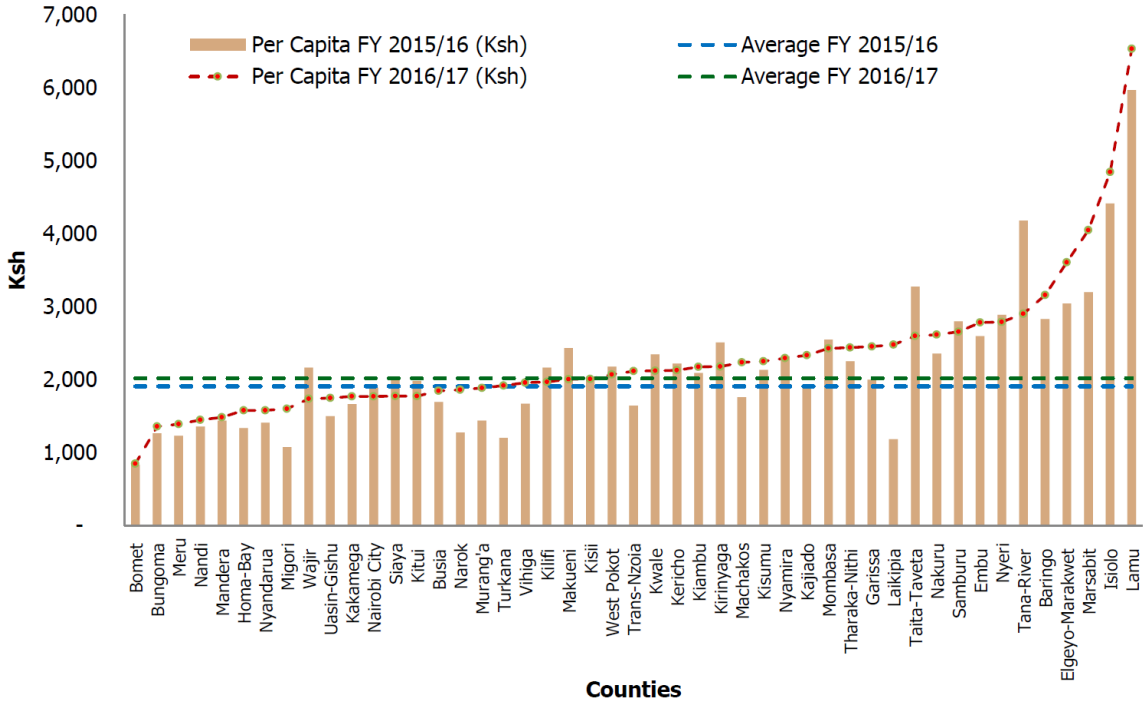


Figure 12. county governments' per capita allocation to health in the 2015/16 and 2016/17. Adapted from the 2016/17 national and county Health Budget Analysis Report

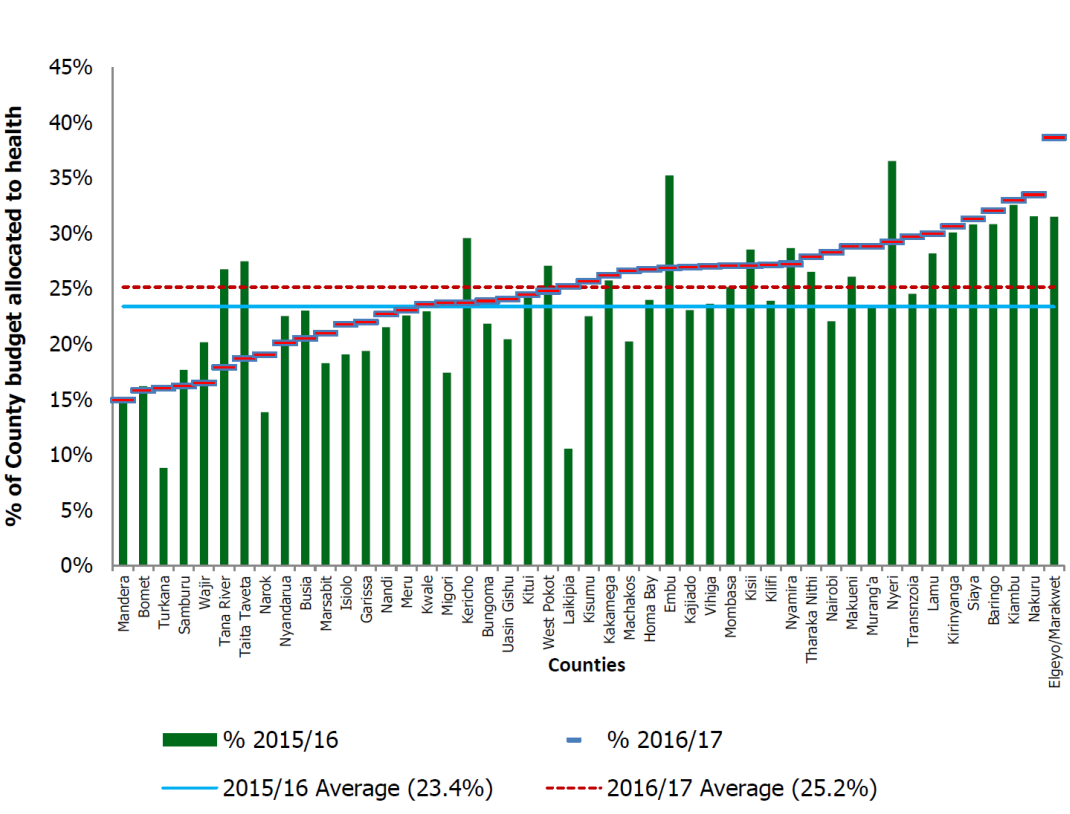


Figure 13. county Health Budget Allocation as a percentage of Total county Budget in the financial years 2015/16 and 2016/17. Adapted from the 2016/17 national and county Health Budget Analysis Report

Purchasing, provider payment mechanisms and benefit package

Purchasing of health services in Kenya is done through the MoH, county governments, NHIF, private health insurance schemes and out-of-pocket payments. The national and county governments jointly operate approximately 4616 health facilities. The national government pays salaries for healthcare workers at the tertiary health facilities while county governments meet the human resource costs associates with all other public health facilities. Beyond the HR costs, health facilities are paid on a line-item basis[32]. The line-item approach to budgeting does not allow for any flexibility on what can be budgeted for and procured. There is need to move towards other budgeting approaches such as global and programme-based budgeting approach.

The NHIF purchases healthcare on behalf of its 6.3 million principal members and their immediate families. The fund purchases health services for its members by making payments to about 2000 contracted health facilities. Outpatient services are paid through capitation, at an annual rate of KES 1200 per person. In-patient services are reimbursed on a per diem basis, based on a negotiated rate between the NHIF and the hospital. In the case of the civil servants' scheme, NHIF reimburses healthcare providers through a fee-for-service model.

The NHIF conducts some form of 'strategic' purchasing by assessing and contracting health facilities, but mechanisms for continuous monitoring and engagement with facilities to ensure that quality is improved are weak. Hospitals are under three contract categories; A, B & C. In Category A, are government hospitals from where NHIF members can access comprehensive cover for all services, including surgery without any co-payment. In category B are small and medium sized private and faith based hospitals from where NHIF members can enjoy comprehensive services but are required to co-pay for surgery, except for caesarian section. Category C consists of private healthcare providers to whom NHIF pays for a daily rebate and the member co-pays all other expenses above the daily rate.

Private health insurance companies purchase healthcare for their clients by contracting healthcare facilities. The payments are mainly done through a fee-for-service payment scheme. These companies do some form of 'strategic' purchasing for healthcare by selecting and contracting specific healthcare providers on the basis of the service offered, location, price

[32] Chuma and Okungu. 2011. Viewing the Kenyan health system through an equity lens: implications for universal coverage
https://equityhealthj.biomedcentral.com/articles/10.1186/1475-9276-10-22

among other factors. However, these companies hardly deploy any mechanisms to evaluate to guarantee the quality of healthcare they purchase on behalf of their clients.

Leadership and Governace

To promote collaboration between the two levels of governments, the Intergovernmental Relations Act, 2012 provides for the establishment of consultative forums. Through these forums, the national and county governments coordinate health-related activities in the country. In broad terms, the leadership and governance structures at the national and county levels are as presented in **Figure 14.** At the county level, the political governance and management of health care delivery services is overseen by the County Health Committee. The committee is chaired by the county executive committee member of health and answers to the Governor of the county and the county parliament. The County Health Management Teams (CHMTs) are responsible for the management and service delivery of the health services in counties. The CHMTs supervise the Sub-County Health Management Teams, Health Facility Management Teams and the community units.

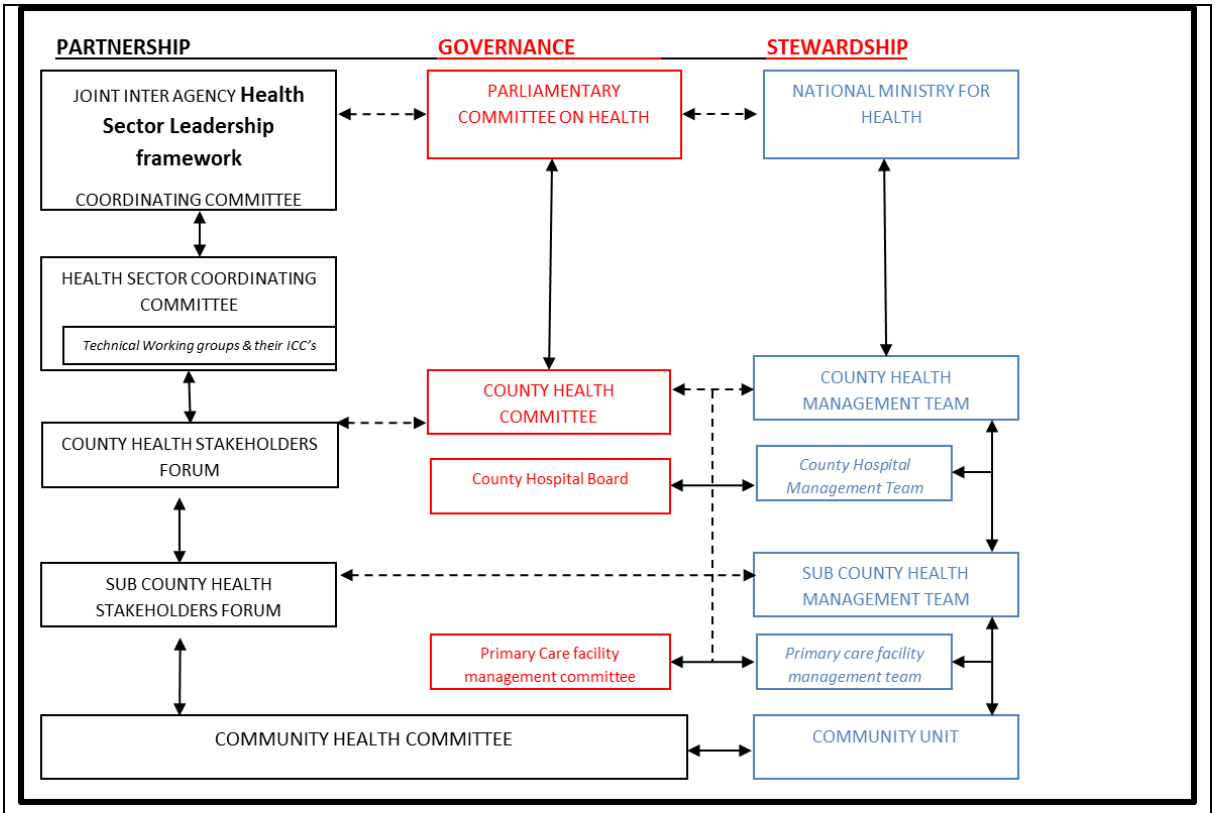


Figure 14. Governance of health servces in Kenya's devolved system of government. Adapted from the Comprehensive Multi-Year Plan for Immunization[33].

Human resources for health

Human resources for health in Kenya compare poorly to Africa and global estimates: According to the SARAM report[34], the doctor–to-population ratio in Kenya is less than 1 per 10,000 and falls short of the national benchmark of 3 medical officers per 10,000 people[35]. In 2012, WHO estimated that Kenya had 1.8 physicians per 10,000 population. Despite the discrepancies in the doctor-to-population ratios as estimated by the SARAM report and by WHO, it is clear that there are deficiencies in the number of healthcare workers in Kenya. The ratio of healthcare worker-to-population in Kenya compares poorly to Africa's and Global averages[36]. Kenya has 1.8 doctor and 7.9 nurses and midwives per 10,000 population compared to an average of 2.8 and 12 for Africa respectively (data from 2012)[37].

[33] Comprehensive Multi-Year Plan for Immunization (2015 – 2019). MoH.
[34] Kenya Service Availability and Readiness Assessment Mapping (SARAM) Report. Nairobi, Kenya: MOH. 2013.
[35] Human Resources for Health and Health Infrastructure Norm and Standards. Nairobi, Kenya: MOH. 2013.
[36] http://www.who.int/gho/health_workforce/physicians_density/en/
[37] http://www.who.int/gho/en/

Notably, according to the SARAM report, there is a complete lack of certain cadres and specialties of healthcare workers in specific counties. Some of these specialties include: radiologists; psychiatrists and pathologists. There are significant variations in the ratios of healthcare workers to the population across counties with some counties having zero doctors per 10,000 population (e.g. Samburu) while some having 2 medical doctors per 10,000 people (e.g. Nairobi).

Health Information Systems

Health information systems (HIS) in Kenya are informed by the Kenya eHealth Strategy (2011-2017)[38]. HIS is one of the five key strategic areas of intervention contemplated by the strategy. The other four are telemedicine, information for citizens, mHealth and eLearning. Information related to service delivery within the HIV/AIDS, Immunization, Malaria, TB and RH/FP priority programs is to a large extent managed within the District Health Information Software (DHIS 2) a flexible, web-based open-source information system used by many countries across Africa. DHIS 2 warehouses data on service delivery across many disease areas including HIV/AIDS. It is worth noting that the HIV/AIDS program maintains its own database that warehouses data on HIV/AIDS service delivery. **Figure15** illustrates the flow of information using the immunization program as an example.

[38] Kenya eHealth Strategy (2011-2017). MOH. 2010.

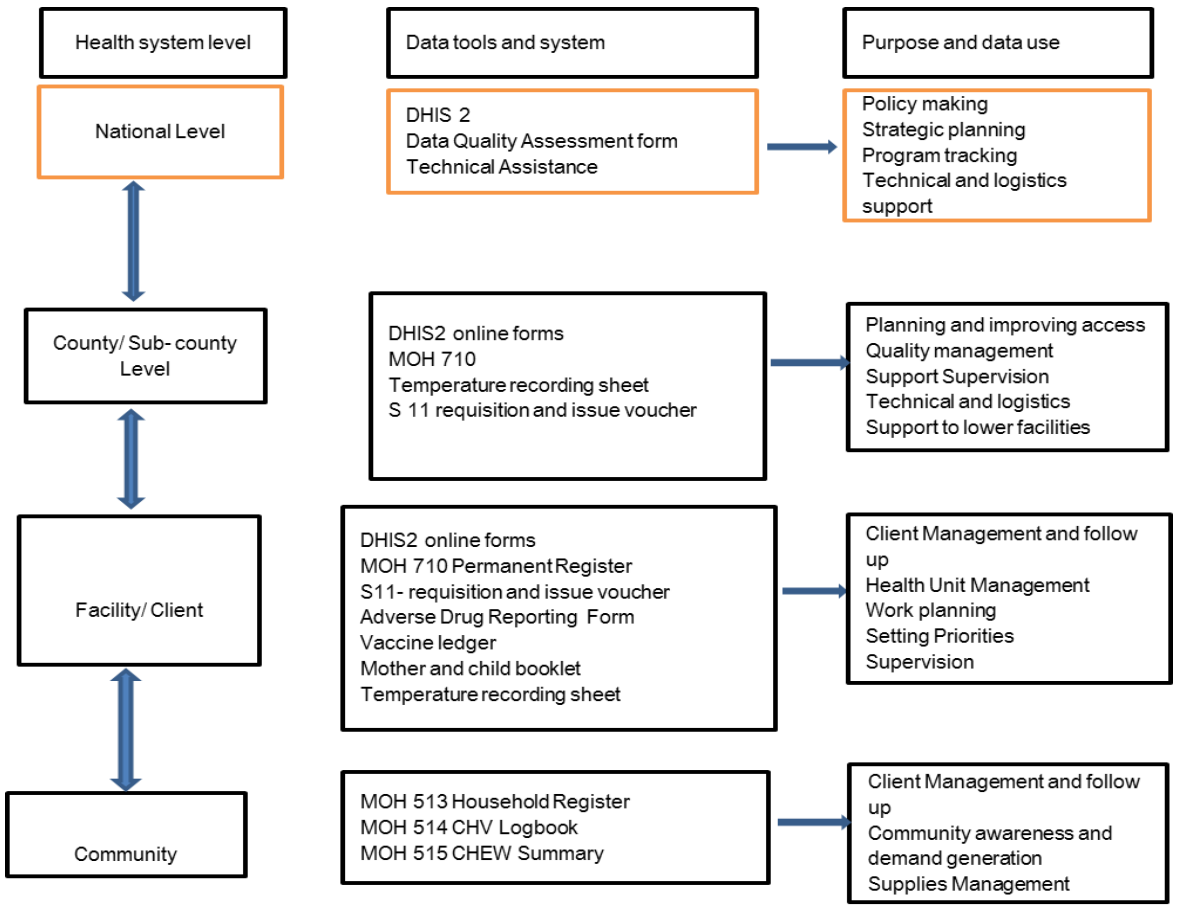


Figure 15. Flow and Use of Immunization data at various levels of the healthcare system. Adapted from the Comprehensive Multi-Year Plan for Immunization (2015 – 2019).

Increases in international funding for health have been accompanied by greater demands for data to monitor program implementation and performance, evaluate progress and ensure accountability[39]. The adoption of DHIS2, has led to more systematic data collection at health facilities[40] [41]. However, scientific evidence shows that the accuracy, completeness and timeliness of data reported through these systems are sub-optimal[42].

A recent systematic study on the completeness of data reported on the DHIS2 platform, using malaria as a case study, revealed that despite 59%-91% of the surveyed health facilities having malaria diagnostics capabilities, between 2011 and 2015, data on the number of cases tested for malaria was not available in DHIS2 over this time period. Further, in 2015, only sparse malaria-

[39] Chan et al., 2010. Meeting the demand for results and accountability: a call for action on health data from eight global health agencies. PLoS Med.
[40] Manya et al., national Roll out of District Health Information Software (DHIS 2) in Kenya , 2011 – Central Server and Cloud based Infrastructure. IST-Africa 2012 Conference Proceedings. 2012.
[41] Karuri et al,, 2014. DHIS2: The Tool to Improve Health Data Demand and Use in Kenya. Journal of Health Informatics in Developing Countries

test data for microscopy [11.5% for <5 years; 11.8% for ≥5 years] and rapid diagnostic tests (RDT) [8.1% for all ages] was reported[42]. While reporting of data from the public sector is incomplete and inaccurate, there is hardly any data on the five priority programs (as well as in other health programs) that is reported onto the DHIS2 platform by the private sector.

Medical products and technologies

Prior to devolution, the national-level programs coordinated the forecasting and procurement of medical products within each of the five priority programs. After devolution, this role has remained unchanged in the HIV/AIDS, Immunization, Malaria and TB programs. The RH/FP program lost the line budget item for the procurement of medical commodities at the onset of devolution. In the 2016/2017 financial year, funds for the procurement of syringes and needles for immunization were allocated to the county governments and the national-level program. The Unit of Vaccines and Immunization Services (UVIS) coordinates the procurement of vaccines in collaboration with UNICEF and GAVI.

The importation, manufacture, trade and use of medical products is regulated by the Pharmacy and Poisons Board (PPB); the Kenya Medical Laboratory Technicians and Technologists Board (KMLTTB); and Kenya Bureau of Standards (KEBS). The procurement of all publicly funded medical products is governed by the Public Procurement Act, and in the public sector, this is largely conducted through the Kenya Medical Supplies Authority (KEMSA). Healthcare providers in the faith-based and private sector procure medical products largely through the Mission for Essential Drugs (MEDS) and several for-profit manufacturers and distributors of medical products respectively. Orders for medical commodities from KEMSA are done through KEMSA's Logisitics Management Information System (LMIS).

Reviews of the availability of medical commodities in Kenya suggest significant gaps. For instance, according to the SARAM report[34] the mean availability of malaria commodities in 2013 at primary health facilities and hospitals was at 55% and 65% respectively (SARAM, 2013). Beyond the quantitative gaps in medical products, there is also evidence that the quality of medical products in Kenya is to some extent sub-optimal. A recent study used standardized patients to assess the quality of medical products in public and private healthcare facilities in Kenya[43]. The study showed that 17% of the sampled medical products did not meet quality specifications and that the existence of poor quality medical products was evident across public and private healthcare facilities.

Efficiency of the Kenyan health system

[42] Githinji and Rono et al. Completeness of malaria indicators reported through the District Health Information System in Kenya, 2011-2015. Malaria Journal. 2017.

[43] Wafula et al., 2017. Examining the Quality of Medicines at Kenyan Healthcare Facilities: A Validation of an Alternative Post-Market Surveillance Model That Uses Standardized Patients.

The Kenyan health system performance is sub-optimal: Comparison of health outcomes vis-à-vis expenditure in health across several countries suggests that Kenya's health system is comparatively inefficient. According to the World Bank Group's Public Expenditure Review of 2014[44] Kenya performed poorly as regards in both maternal and child mortality rates; when compared to its neighbours (e.g. Uganda, Ethiopia, Botswana, Rwanda, South Africa), some of which spend less on health. In general, the study shows that given the relatively high spending, the country should be able to further lower child and maternal mortality rates by addressing inefficiency in the health system. Some of the commonly cited problems include: public finance management (PFM) related challenges such as poor flow of funds across governance levels, poor allocation of fund between counties, overuse of high-end curative services at the expense of primary health care development, uneven distribution of health workforce and health infrastructure development, absenteeism and poor workers' knowledge and poor efficiency in public health facilities in general. In addition, the review also highlighted the difficulties associated with a large (although declining) share of health donor funding being off-budget, which undermines strategic prioritization, horizontal integration and health system strengthening, and sustainability of financing (in view of the future decline in donors support).

5. The Case of Priority Health Programs in Kenya

5.1. Immunization

[44] World Bank. (2014b). Laying The Foundation For A Robust Health Care System In Kenya. Kenya Public Expenditure Review (volume II). Washington, D.C.: World Bank.

In Summary

A) Key findings

- Kenya has recorded significant progress in immunization – a key one being the dramatic reduction in cases of Polio from 350,000 in 1980 to 35 cases in 2016. This achievement is in part due to concerted efforts and funding through the Polio Global Eradication Initiative
- The immunization program in Kenya is challenged by significant financing gaps. Full implementation of immunization between 2016 and 2020 is precluded by a funding gap of up to USD 525 million
- Vaccine coverage in Kenya has been on the decline over the past 5 years; currently falls short of national and internationally endorsed targets; and compares poorly to other LMICs
- Wide disparities in vaccine coverage exist across the 47 Counties with the difference between the counties being as high as over 60% points
- Vaccine coverage positively correlates with county GDP per capita. Counties in the lowest quintile have average vaccine coverage of 63% while Counties in the highest quintile have an average coverage of 83%.
- Kenya government's expenditure on vaccines and the immunization program as a percentage of GDP has been on a declining trend over the past 10 years (from 0.15% in 2012 to 0.07% in 2017)
- Government funding on vaccine is relatively low compare to other countries in the region. This level of funding is not adequate to sustain the programme, at a time when donor funds are on the decline
- If GAVI's vaccine co-financing mechanisms are lost or reduced, the level of government's expenditure on immunization will not be adequate to meet the country's needs.
- If the existing GAVI vaccine co-financing mechanism is lost, the resource requirements for vaccines will constitute more than 4% of the governments general expenditures on health and 0.20%-0.25% of government general expenditure. Considering that the governments expenditure on health as a proportion of total government expenditure is on a downward trend, it is unlikely that with the current financing mechanisms, immunization financing by the Kenyan government will be sustainable.
- Kenya's immunization program is characterized by several challenges, key among them being: lack of clarity on roles and responsibilities of the national and county governments; deficiencies in the capacity of healthcare facilities to offer immunization services particularly due to deficiencies in human resources for health and cold chain infrastructure
- Proposals that have been put forward so far to transition the immunization program to sustainable financing mechanisms recommend the establishment of dedicated immunization funds. While there are clearly gains made as a result of the vertical nature of the immunization programme, the proposals made are unlikely to be successful because they: do not explore opportunities for some degree of integration of priority programs into the health system; are unlikely to secure support from the National Treasury (NT) since they advocate for earmarking, which makes the NT less agile in re-allocating funds depending on pressing national needs that may arise in the future; the proportion of Kenya's population that is formally employed and currently contributing towards pension funds is small and a detailed analysis of how much forward moving tax revenue based on pension can generate vis-à-vis immunization financing gaps has not been conducted.
- Kenya needs to explore the integration of immunization financing into more sustainable

mechanisms such as the incorporation of immunization as a benefit under the NHIF.

B) Key recommendations

- The national and county governments should explore the best model to provide immunization health services. This model may include the retention within the national government of functions that benefit from economies of scale and which directly impact healthcare service delivery. Such functions may include the financing and procurement of vaccines, needles and syringes where there is value in pooling the procurement of vaccines across all counties so as to leverage on economies of scale and negotiate for preferential prices on the vaccines. Further, it is recommended that the national and county governments jointly develop a framework to guide the implementation of these functions within the healthcare sector that impact on the public good.
- Increased funds allocation towards the Immunization program to bridge the existing funding gap which is likely to increase as Kenya transitions out of GAVI support
- The national and county governments should review the merits and demerits of delivering immunization healthcare services using the current vertical structure versus an integrated delivery structure. This is particularly important considering that to a large extent immunization services are for the public good i.e. its impact goes beyond the immunization program to influence the wider public.
- The MoH, jointly with county governments should make efforts to address the inequities in vaccine coverage across different counties in Kenya. The UVIS should identify counties that have low vaccine coverage and implement demand-creation activities. This may include increased advocacy on the value of immunization as well as coordination with community health divisions at the county levels to enhance follow up of children who miss out on immunization visits.
- The national and county governments should uphold their commitment to fund the expansion and upgrade of CCE infrastructure in Kenya in line with the comprehensive cold chain expansion and replacement plan that has already been developed by UVIS in collaboration with other stakeholders.
- The national and county governments need to systematically map out the human resource capacity (especially in terms of Medical Equipment Technicians; METs) to identify qualitative and quantitative skill gaps that may exist and implement systematic capacity building to increase Kenya's capacity to service and maintain CCE. The mapping exercise should also develop a centralized data repository of the METs that should be linked to the wider HRH structure and reporting mechanisms within MoH.

5.1.1. Governance of the immunization program in Kenya

Governance of the immunization program is split between the national and county governments. The national government is responsible for procurement of vaccines including GAVI supported vaccines, distribution of vaccines to the nine regional vaccine stores; policy development;

research; advocacy; resource mobilization; capacity building of county staff; oversight on quality and standards and oversight and coordination of relevant operational research. Counties on the other hand are responsible for hiring and training health care providers, procurement of immunization needles and syringes, procurement and management of cold chain equipment and distribution of vaccines within the county. In collaboration with the national government, counties also have the responsibility of responding to any adverse events following immunization (AEFIs).

At the national level, the immunization program is managed by the UVIS, within the Division of Family Health at MoH, whose mandate is to coordinate vaccination services for all preventable disease by providing guidelines and selected priority vaccines. UVIS also provides vaccines for high risk groups such as: tetanus for special occupational risk groups; hepatitis B vaccines for health workers; typhoid vaccine for food handlers; and yellow fever vaccination for foreign travelers[45].

UVIS is supported by several partners whose work is coordinated by the Child Health Interagency Coordinating committee (CH-ICC). The CH-ICC reports to the Health Sector Coordinating Committee (HSCC) that is chaired by the MOH Principal Secretary (PS). It is worth noting that by the time a joint appraisal exercise was conducted in August 2015 by a team drawn from GAVI, MOH, national Treasury and several partners, the HSCC had not met since 2013[46]. Since devolution, the MoH-led coordination role seems to have been lost. An ICC exists but there are no clear channels of communication between the ICC and MoH's top leadership. Currently, the country lacks a mechanism that coordinates immunization related activities between the national and county levels of government. A draft coordination mechanism framework exists but has not yet been finalized.

5.1.2. Immunization service delivery, outcomes and determinants

The immunization programme in Kenya provides the BCG, eight vaccine formulations through the routine immunization programme: These formulations are BCG, oral polio vaccine (OPV), pentavalent vaccine which is a combination of diphtheria, tetanus, pertussis, hepatitis B and Haemophilus influenzae type b (Hib) vaccines, pneumococcal vaccine (PCV10), Rotavirus vaccines (RT), inactivated polio vaccine (IPV), Measles vaccines and yellow fever vaccine. These vaccines have been introduced to the routine immunization programme at different time points. For instance, with support from GAVI, Kenya introduced the pentavalent vaccines (a combination of diphtheria, tetanus, pertussis, hepatitis B and Haemophilus influenzae type b (Hib) vaccines) in 2002, yellow fever vaccine in 2002, the pneumococcal vaccine (PCV10) in 2011 and the rotavirus vaccine in July 2014. The decision to introduce a vaccine into the national immunization schedule is made by the government,

[45] Comprehensive multi-year plan for immunization. Unit of vaccines and immunization services (2015-2019).

[46] Kenya - Joint Appraisal Report. GAVI. 2015.

typically after considering the expected health impact, cost, and financing, as well as recommendations from WHO and UNICEF[47].

Vaccine coverage in Kenya has been on the decline over the past 5 years: According to the latest available data from the UVIS, Kenya has an overall immunization rate of 86% for BCG; 81.5% of the third dose of pentavalent; and 75.6% of the fully immunized child (FIC)[48] (**Figure 16**). An analysis of the temporal trends in vaccine coverage reveals a worrying trend. Relative to pre-devolution estimates, vaccine coverage has declined across all antigens and is currently below the 90% target set out in the Global Vaccine Action Plan (GVAP) to which Kenya is a signatory. Taking the case of DPT3 as an example and assuming that 1 million children are born in Kenya every year, the decline in coverage from 96% (in 2011) to 81% (in 2016) means that approximately 150,000 more children missed out on immunization in 2016 compared to 2011. This observation suggests that with devolution, the gains that had been previously made (in terms of vaccine coverage) have, at least in part, been lost.

[47] World Health Organization. Principles and considerations for adding a vaccine to a national immunization programme: From decision to implementation and monitoring, 2014 . http://apps.who.int/iris/bitstream/10665/111548/1/9789241506892_eng.pdf?ua=1. Accessed 15 August 2016

[48] According to WHO guidelines, children are considered to have received all basic vaccines when they have received a vaccination against tuberculosis (also known as BCG), three doses each of the DPT-HepB-Hib (also called pentavalent) and polio vaccines, and a vaccination against measles. The Kenyan immunisation programme considers a child to be fully immunized, herein referred to as a fully immunized child (FIC), if the child has received all basic vaccinations and three doses of the pneumococcal vaccine (also given at age 6, 10, and 14 weeks).

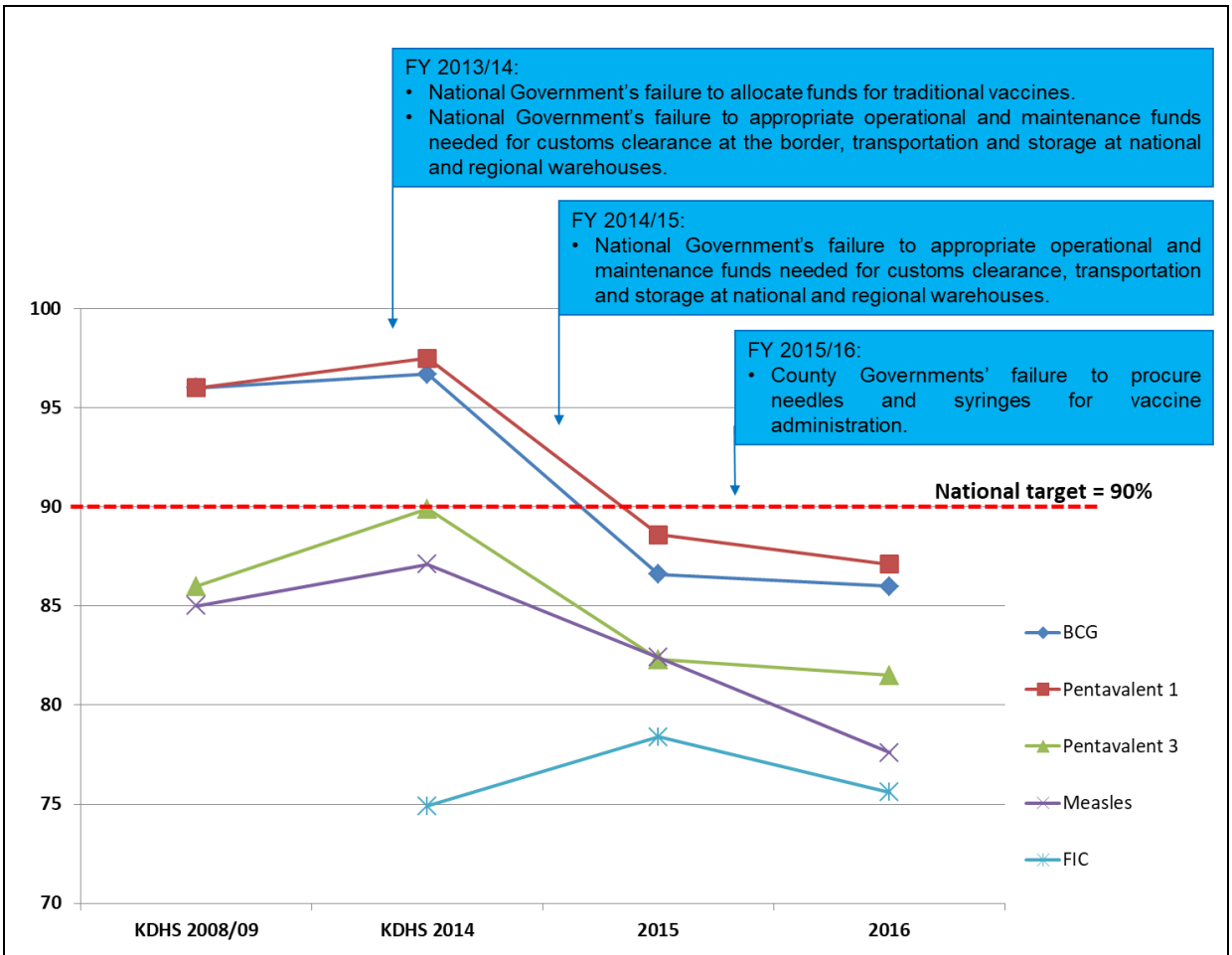


Figure 16. Temporal trends in vaccination coverage in Kenya according to selected antigens and the fully immunized child. Data sourced from the KDHS 2008/09, KDHS 2014, and the Immunization performance and vaccine cold chain summary report of February 2017.
Author's own illustration.

While this technical review did not find evidence on causality between different events and the decline in vaccine coverage in Kenya, it is likely that some events may have contributed to the decline (**Figure 17**). In FY 2013/14, the national government did not allocate funds to traditional vaccines yet vaccines stocks were depleting[46]. In the next financial year, funds for traditional vaccines (BCG, oral polio vaccine, tetanus, measles and rubella vaccines) were not

appropriated in the national government budget. Further, the national government did not appropriate operational and maintenance funds needed for customs clearance, transportation and storage of vaccines at national and regional warehouses. These events, coupled by the failure of some county governments to procure adequate syringes and needles for the administration of vaccines in FY2015/16 are likely to have contributed to the decline in vaccines coverage experienced in Kenya since 2014. The failure of the national government to allocate funds for the purchase of traditional vaccines highlights the unpredictability of financing for priority health programs as well as the lack of contingency financing.

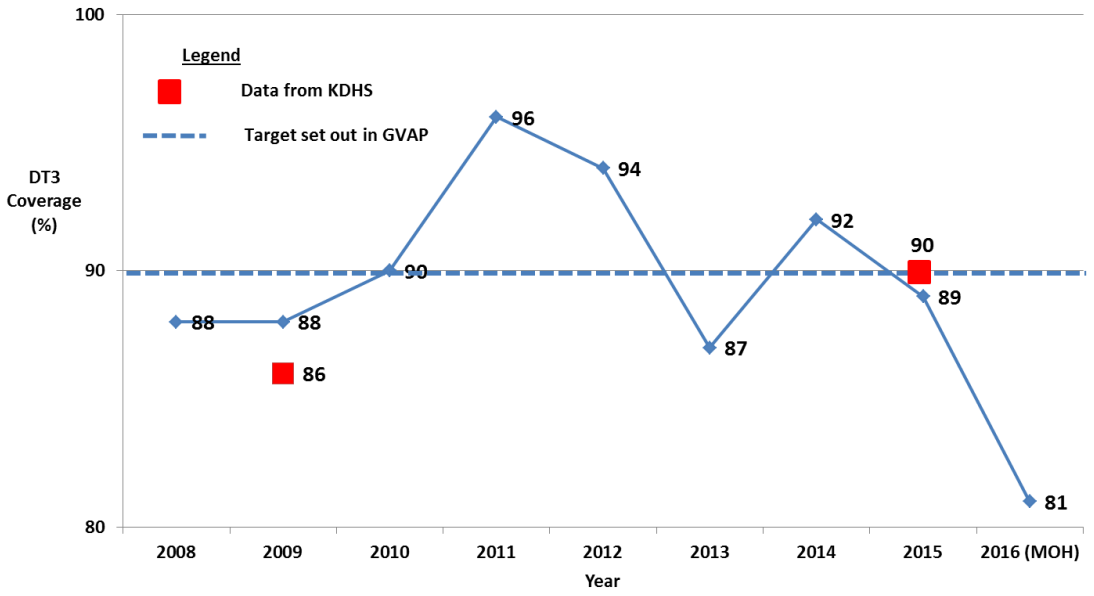


Figure 17. Temporal trends in DPT3 coverage in Kenya (2008 – 2016). 2016 data is based on the national immunization consultative forum. Immunization performance and vaccine cold chain summary report (MoH. 2017). Data points represented by red squares are based on the Kenya Demographic Health Surveys (KDHS) of 2008/09 and 2014. All other data (shown in blue diamonds) were obtained from WHO.
Author's own illustration.

Vaccine coverage in Kenya compares poorly to other countries with similar income levels: In comparison to other lower middle income countries, vaccine coverage is poor (**Figure 15**). For instance, while Kenya (with a GNI per capita of 1340 USD) has a higher income compared to Bangladesh (GNI per capita of 1190 USD) and Tajikistan (GNI per capital of 1280 USD), it has achieved a significantly lower DPT3 coverage (88%) compared to Bangladesh (94%) and Tajikistan (96%; **Figure 18**). This observation, suggests that there may be inefficiencies in immunization service delivery in Kenya as compared to other countries that are equally resourced.

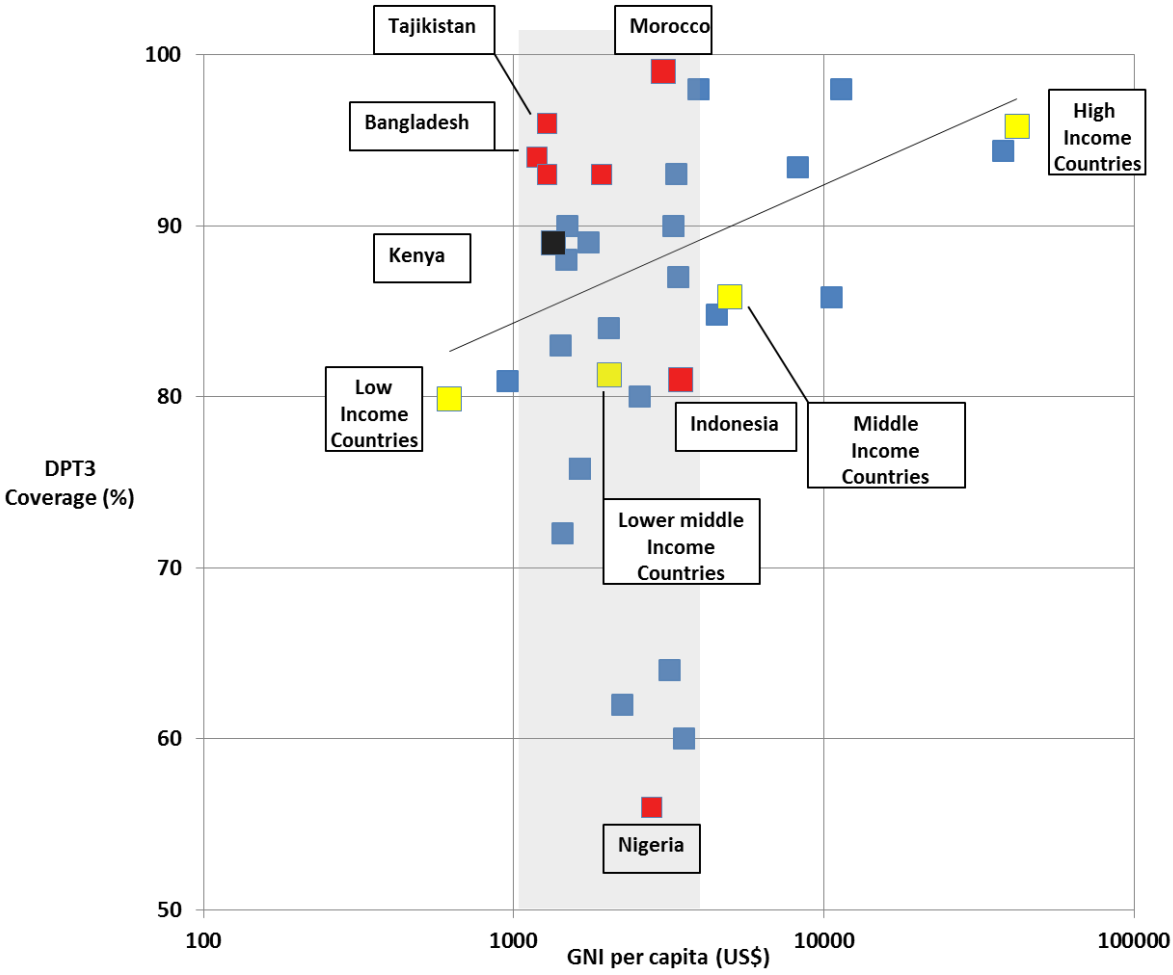


Figure 18. DPT3 coverage versus income. All data refer to 2015. Data sourced from the World Development Indicators. Grey zone indicate the income range for lower middle income countries.
Author's own illustration.

Notably, vaccine coverage varies by antigen (**Figure 19)** and there are significant variations in coverage across counties with regards to BCG (**Figure A1**); Measles (**Figure A2**); Pentavalent 3 (**Figure 19**); and FIC (**Figure 21**).

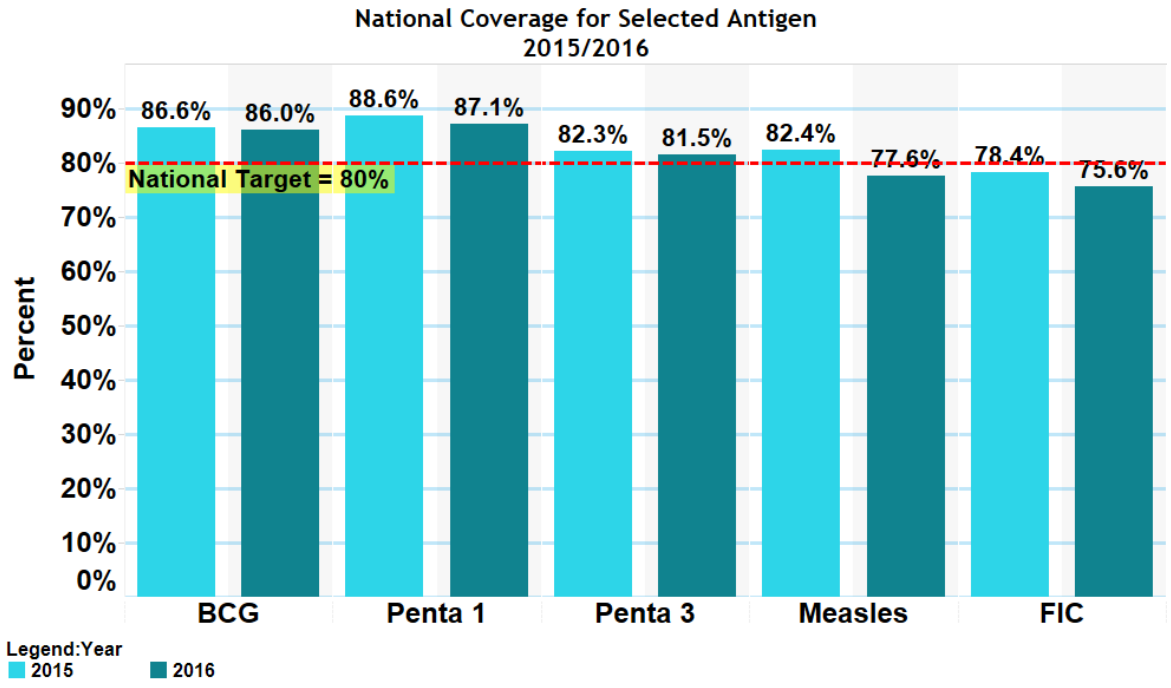


Figure 19. national immunization coverage according to selected antigens and the fully immunized child. Adapted from the Immunization performance and vaccine cold chain summary report of February 2017

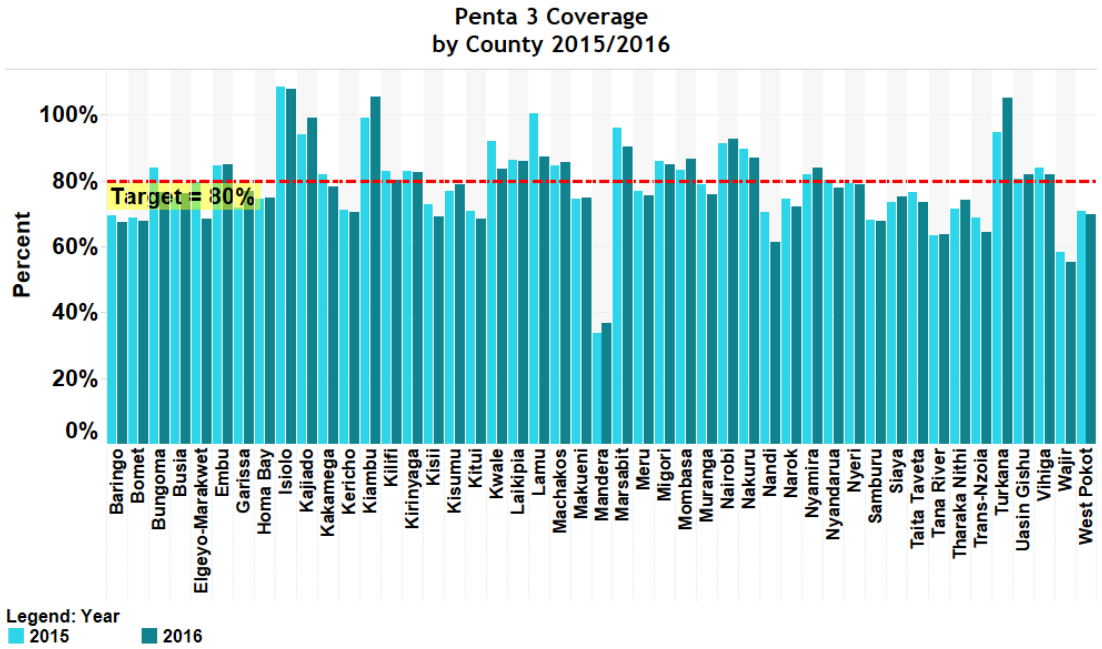


Figure 20. Pentavalent 3 coverage by county. Adapted from the Immunization performance and vaccine cold chain summary report of February 2017

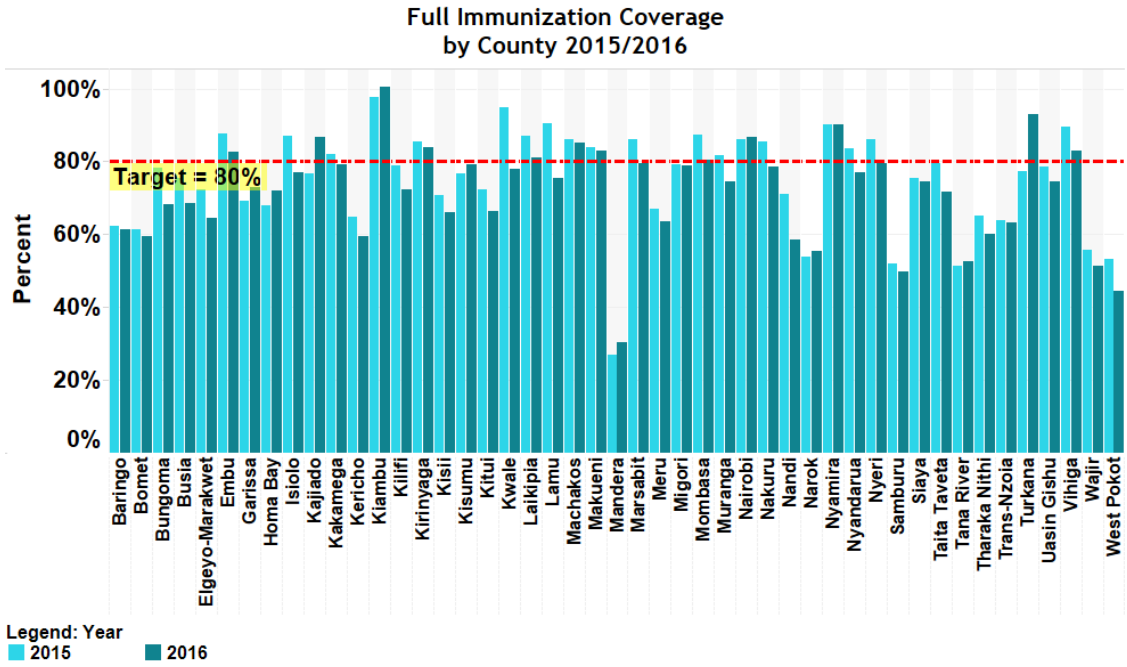


Figure 21. Full immunization coverage. Adapted from the Immunization performance and vaccine cold chain summary report of February 2017

Vaccine coverage in Kenya varies across counties and positively correlates with county GDP per capita estimates (Figure 22): This observation suggests that economic development is associated with improvements in vaccine coverage.

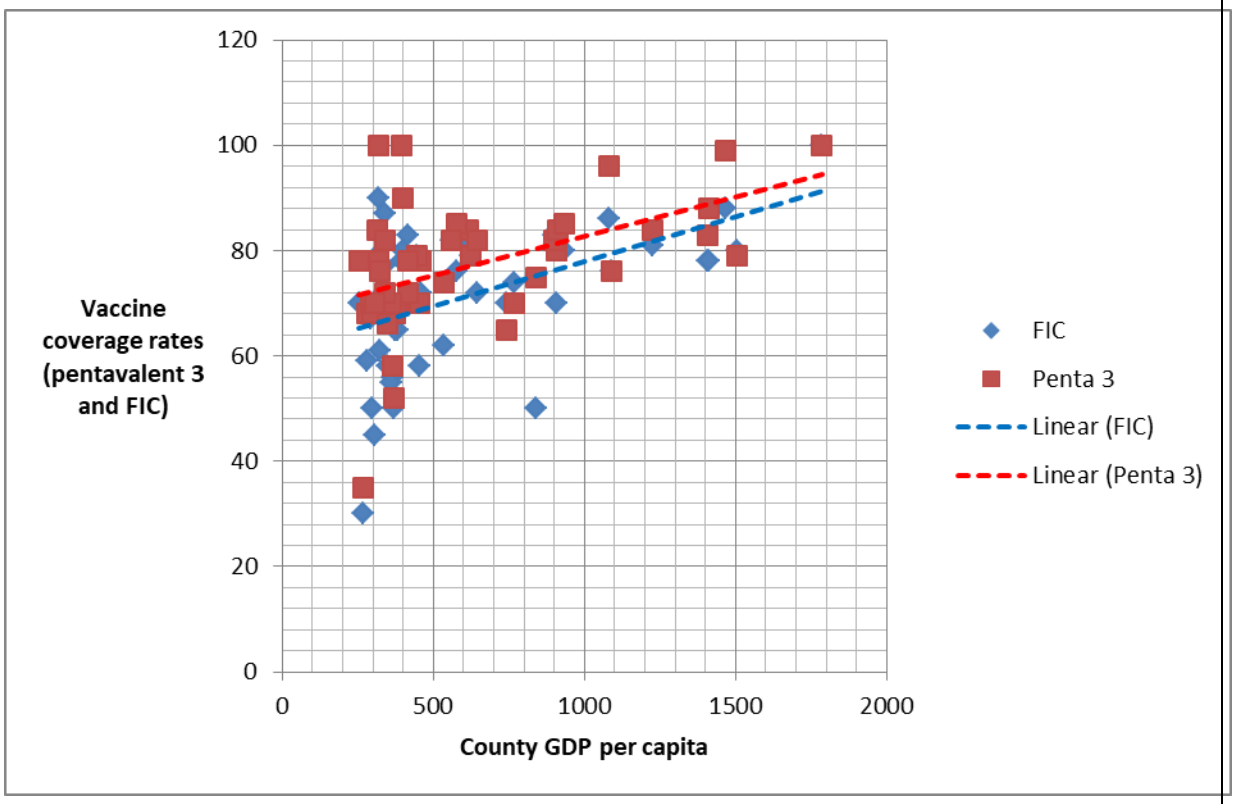


Figure 22. Correlation between county GDP per capita and Pentavalent 3 coverage and the fully

immunized child (FIC) in Kenya. county GDP per capita estimates obtained from the World Bank Group's Bright Lights, Big Cities Measuring national and Subnational Economic Growth in Africa from Outer Space, with an Application to Kenya and Rwanda[49]

Wide inequities exist between and within counties. The immunization performance and vaccine cold chain summary report of February 2017 gives a detailed account of dropout rates, reporting rates, stock outs of vaccines and the number of unvaccinated children at sub-county level. Some sub-counties have vaccine coverage rates below 50%. The coverage rates vary widely within Counties. For instance, the coverage rates for measles and Pentavalent 3 vaccines in Tiaty sub-county in Baringo county are below 50% yet they are above 80% in the Mogotio sub-county of the same county. Dropout rates also vary considerably across counties and sub-counties. For instance, Isiolo county had a dropout rate of greater than 10% in each of both of its two sub-counties. On the other hand, Kakamega, Kisii and Kericho counties had dropout rates less than 10% in all their sub-counties.

According to the immunization performance and vaccine cold chain summary report of February 2017, Kenya experienced varying vaccine stock-outs between October and December 2016. Wide variations in stock out rates were reported across counties ranging from 44% (Embakasi North Sub-county, Nairobi county), to 39% (North Mugirango Sub-county, Nyamira county) and to and, 37% (Emurua Dikirr Sub-county, in Narok county). The highest stock out

[49] World Bank Group. 2015. Policy research Working Paper 7461. Bright Lights, Big Cities Measuring national and Subnational Economic Growth in Africa from Outer Space, with an Application to Kenya and Rwanda

rate (44% for BCG vaccines) was recorded in Embakasi North Sub-county of Nairobi county. These stock-out rates point towards deficiencies in the funding, procurement, distribution and/or supply chain management of vaccines in Kenya. Stock outs of vaccines may potentially explain the declining vaccine coverage rates described above (**Figure 16** and **17**).

5.1.3. Financing of Immunization

Financing for immunization in Kenya comes from various sources: Financing for the immunization program in Kenya comes from three main sources namely: the government's own resources (domestic financing from government revenues); donors; and private sources (including households). While immunization services are listed as benefit under the NHIF, the fund does not manage funds or pay for immunization services for its members. According to the NHA 2012/2013, the total health expenditure on vaccine-preventable diseases (THE_{VPD}) was KES 14.6 billion (USD171.7 million) accounting for 6.3% of overall THE and 0.43% of GDP in 2012/ 2013. In the same financial year, the public sector, donors and private sources contributed 39%, 38% and 23% of THE_{VPD} respectively.

Government's expenditure on vaccines and the immunization program has been on a declining trend: In 2014, UVIS in collaboration with WHO, UNICEF, GAVI and the Sabin Vaccine Institute conducted a review of immunization financing in Kenya and explored sustainable financing mechanisms. That review revealed that the Kenyan government's expenditure on vaccines and on the immunization program has been on a declining trend (**Table 4**). While the country's GDP has been consistently growing, the government's expenditure on the Immunization program (cost of traditional and new vaccines as well as cost of operations and maintenance) as a proportion of Kenya's GDP and GGE has been declining and is projected to keep declining (**Figure 23**). Further, data from GAVI[50] shows that while the cost of vaccines used in routine immunization in Kenya has been increasing, the Kenyan government's contribution to the cost of these vaccines has declined. In 2011, the governments contributed USD 4,500,250 representing 57% of the cost of vaccines used in routine immunization[50]. This proportion has decreased to 15% in 2013 and 2014 and further to 10% in 2015. It is worth noting that over the same period (2013 – 2015) the GDP (the denominator) in the percentages presented above increased.

[50] GAVI Co-financing summary – Kenya. 2017

Table 4. Temporal trends in the Kenyan government's expenditure on vaccines and immunization in USD Million vis-à-vis GDP.

Data source: Vaccines and Immunization Financing review towards Predictable and Sustainable Immunization Financing. MoH. * Sourced from the GAVI Co-financing summary on Kenya (2017)

Indicator	2011	2012	2013	2014	2015	2016	2017	2018	2019
GDP (USD Million)	34,300	40,600	45,000	51,800	59,100	66,000	75,000	82,000	91,800
Expenditure on traditional vaccines	3.7	5.7	4.5	4.3	4.5	4.6	4.7	4.9	5.02
Expenditure on GAVI Co-financing	2.8	3.5	2.5	2.2	3.3	3.7	3.7	3.9	4.0
Expenditure on new vaccines	61.9	52.7	33.6	29.1	38.1	41.5	42.7	44.0	45.3
Total expenditure on vaccines	68.4	61.9	40.7	35.6	45.6	49.7	51.2	52.7	54.3
Expenditure on operations and maintenance	1.1	1.1	0	0	1.2	1.2	1.2	1.2	1.2
Total expenditure on immunization	7.6	10.3	7.0	6.6	9.0	9.4	9.6	9.9	10.2
Total expenditure on immunization as % of GGE		0.5	0.3	0.2	0.3	0.3	0.2	0.2	0.2
Total expenditure on immunization as % of GGHE		5.8	3.5	3.0	3.9	4.2	4.3	4.3	4.5
Total expenditure immunization as % of GDP		0.15	0.09	0.07	0.08	0.08	0.07	0.07	0.06
Government contribution to total government expenditure on vaccines used in routine immunization. (%)*	57		15	15					

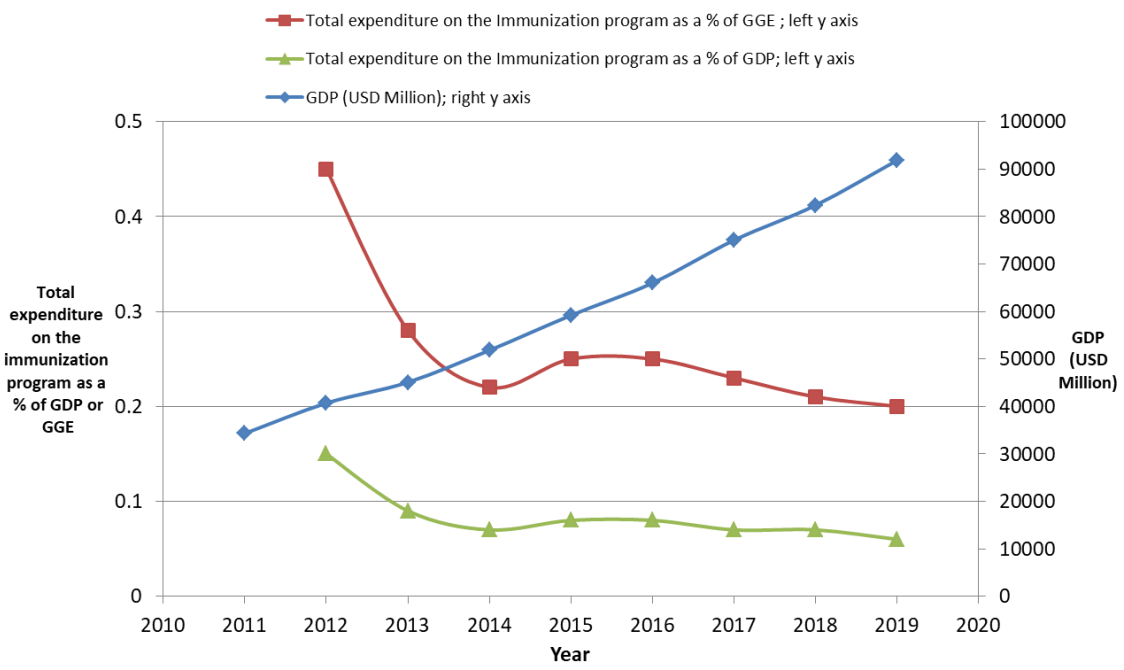


Figure 23. Temporal trend in Kenya government's expenditure on vaccines and immunization as a proportion of Kenya's GDP and GGE.

There are no clear plan for moving towards funding immunization programme through government resources, and future projections show a continued reliance on donor funding. The Comprehensive Multi-Year Plan for Immunization 2015 – 2019 (CMYP 2015 – 2019)[33], provides the detailed breakdown of immunization-related financing needs between 2014. According to the CMYP 2015 – 2019[51], the financing need in 2017 is estimated at USD 145,801,431 (three times the expnditure in 2015) and this is projected to increase to USD 179,268, 328 in 2019 and thereafter reduce to USD 165,843,236 in 2020 (**Table 5**). In total, between 2016 and 2020 USD 828,201,936 will be required to finance immunization in Kenya. Out of this, USD 303,059,610 is secured leaving a funding gap of USD 525,142,326 (63% of total financing requirement). The CMYP anticipates that an additional USD 512,119,251 (herein referred to as probable funds) can be raised from UNICEF, USAID, The World Bank Group and GAVI HSS to reduce the funding gap to USD 13,023,075 (0.02% of total financing requirement). This observation implies that the Immunization Programme continues to depend on and anticipate for more donor funding with less focus on increasing domestic government funding to finance immunization work in the country. This observation is concerning considering that without sufficient and timely planning for alternative mechanisms to finance the

[51] UNICEF is currently conducting an analysis of immunization financing in Kenya[51]. In that analysis, projections of the immuization financing needs in Kenya between 2017 and 2021 are being made. At the time of developing this report, the results of that analysis by UNICEF had not been formally made public. In this regard, the immunization financing estimates and projections presented in the CMYP 2015 – 2019 are the latest official figures.

immunization program (in light of reduction in international financing), the gains made so far through the immunization programme may be lost.

Table 5. Projections of immunization-related financing needs (2016 – 2020) in USD million.

	2016	2017	2018	2019	2020	2016-2020
Total financing requirements	177.5	145.801	159.8	179.3	165.8	828.2
Total financing requirements (per capita)	2.9	2.9	3.2	3.1	3.1	3.1
Total financing requirements (per DTP targeted child)	86.7	86.9	87.5	86.2	84.6	86.3
Total secured funding:	51.0	52.6	65.6	65.	68.0	303.0
National government	8.2	10.8	11.0	11.4	11.7	53.2
County government	0.046	0.072	0.083	0.085	0.091	0.379
Government co-financing of Gavi vaccine	2.9	2.8	5.0	5.5	7.0	23.3
GAVI Co Financing	40.0	38.9	49.5	48.8	49.2	224.4
USAID	1.9					1.9
Funding gap (with secured funds only)	126.4	93.2	94.2	113.5	97.8	525.1
% of total funding requirement	0.7	0.6	0.5	0.6	0.5	0.6
Probable funding:	124.3	91.1	92.0	109.0	95.7	512.1
From national government	5.1	2.3	2.3	5.7	2.4	17.7
From Sub-national government	84.3	86.7	87.5	89.5	91.1	439.0
From Gavi(HSS)	0.9	0.8	0.8	0.8	0.8	4.1
From UNICEF	7.6	1.0	1.0	5.4	1.0	16.0
From USAID	26.3	0.2	0.2	7.4	0.2	34.4
From the World Bank Group	0.17	0.171	0.174	0.178	0.181	0.873
Funding gap (with secured & probable funds)	2.2	2.1	2.2	4.5	2.1	13.0
% of total funding requirement	0.01	0.01	0.01	0.02	0.01	0.02

Efficiency in immunization financing in Kenya has improved but it compares poorly to other LMICs: Analysis of the temporal trend in the efficiency of immunization financing (measured as immunization expenditure/cost per surviving infant) in Kenya shows that the country has experienced improved efficiency (**Figure 24**). Despite this improvement, Kenya still compares poorly with some LMICs like Ghana and Indonesia (**Figure 25**). This observation suggests that there is need for sustained efforts to further improve the efficiency of immunization financing in Kenya. It is important to note efficiency improvement as measured by the cost per surviving infant does not account for potential confounding factors such as improvements in nutrition.

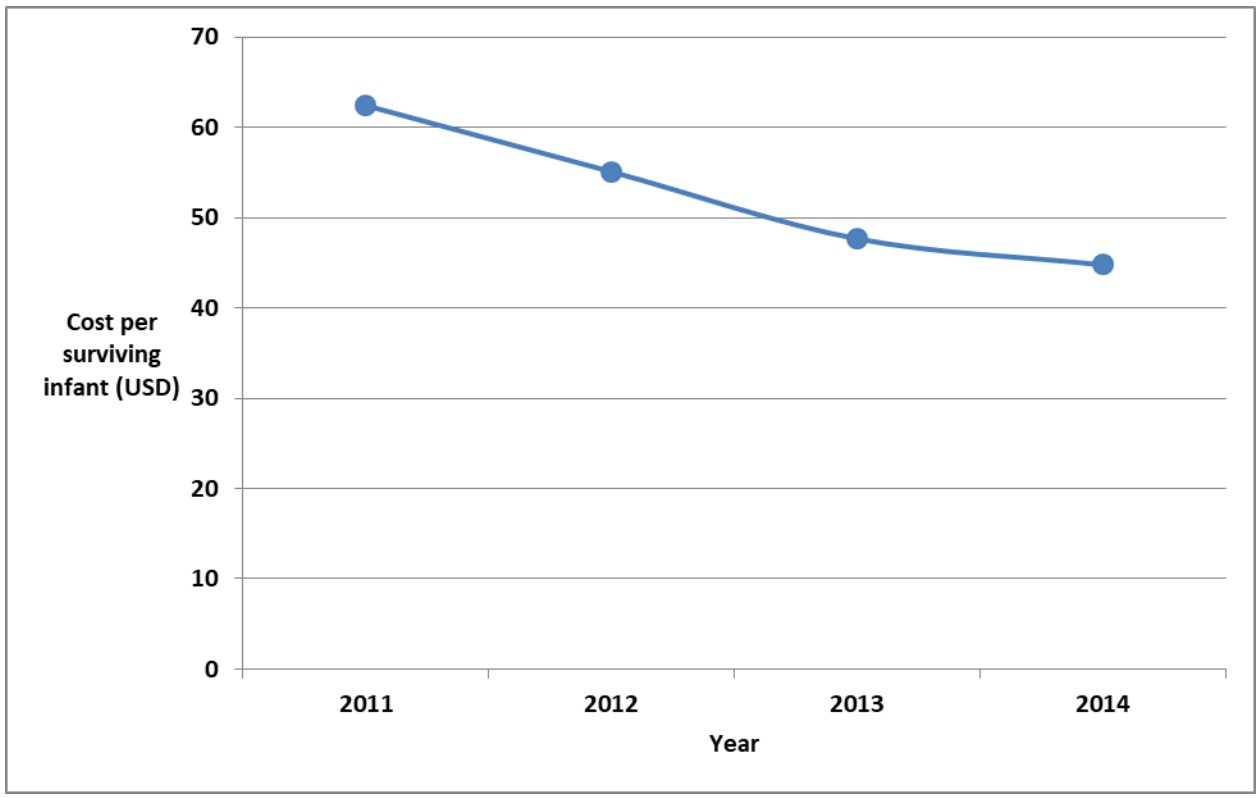


Figure 24. Temporal trend in the efficiency of immunization financing in Kenya.
Data sourced from Gavi Country Annual Progress Reports 2013 and 2014,
Authors' own illustration.

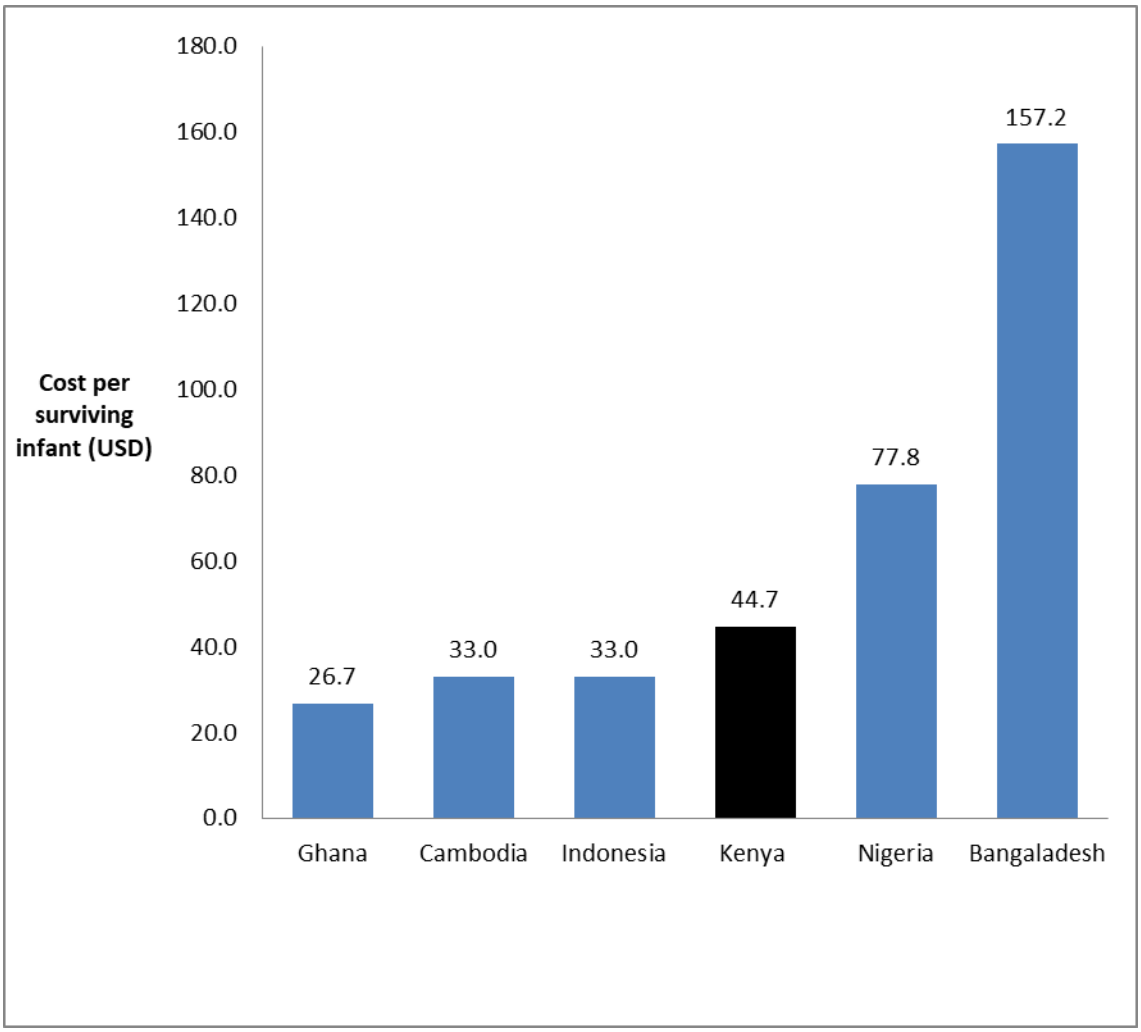


Figure 25. Efficiency in immunization financing (cost per surviving infant) in Kenya compared to other lower middle income countries.
Data sourced from Gavi Country Annual Progress Reports 2013 and 2014,
Authors' own illustration.

5.1.4. Human resources for immunization

Human resources for immunization in Kenya is characterized by quantitative and qualitative deficiencies: As provided by the 2010 Kenya constitution, management of health workforce is a responsibility of county governments. While the national government with support from partners continue to orient tutors in training institution to improve the competencies of pre-service medical and nursing students, financial constraint has limited training of in-service healthcare providers. According to the joint appraisal exercise[46], less than 1% of frontline health workers were receiving EPI updates on a yearly basis. Deficiencies in in-service training also exist among community health workers. According to the Joint Appraisal Report 2015, while there were approximately 25,000 community health workers who were involved in immunization related activities such as defaulter tracing and social mobilization they lacked training in EPI specific areas[46].

There is not database on the number, qualification and expertise of Medical Equipment Technicians (METS). Results from key informant interviews (KII) revealed that, to a large extent, the number and qualifications of METs in the counties is unknown. While some county governments have METs on their payrolls, they have different backgrounds and their qualifications and expertise is not well documented. Some were trained as biomedical technicians at the Kenya Medical Training College (KMTC), while others were initially community health workers on basic skills on how to repair fridges and other medical equipment after which they have taken up the METS role, even if they don't necessarily have the right skills set. Since the onset of devolution, several organizations have conducted training of METs, but this training is not always coordinated. For example, CHAI and UNICEF have trained METs in Nakuru and Turkana Counties respectively and these counties have as many as seven METs.

Only two thirds of health facilities were capable of providing quality immunization services. While there is hardly any documentation of human resources providing immunization-related services at the county government level, the SARAM report contends that only 62% of health facilities in Kenya were capable of providing quality immunization services[34]. The report also highlights the existence of human resource challenges in several counties characterized by inadequately staffed healthcare facilities and weak capacity of several managers to manage immunization services due to movement/reshuffling of the managers across health programmes.

5.1.5. Vaccines and medical products for immunization

Vaccines supply chain and logistics

The Kenya vaccines cold chain network of stores is made of two central vaccine stores managed by the national government. There are eight other regional subsidiary stores spread across the country in various counties (Mombasa, Kisumu, Nakuru, Uasin Gishu (Eldoret), Garissa, Meru, Kakamega and Nyeri); 288 sub-county stores and 6,911 immunizing health facilities. The eight subsidiary stores are the hubs that hold vaccines for the sub county stores. The national government is responsible for managing the two central and the eight regional vaccines stores while the counties manage the sub-county vaccine supply chain stores. As from 2015 counties are responsible for procuring commodities such as syringes,

sharps disposal boxes and dry goods, previously under the oversight of the UVIS and distributed by KEMSA.

Lack of adequate funds for immunization at county level has affected coverage. Key informants reported that county funds allocated towards the procurement of these products by county governments. Lack of adequate funds for immunization at the county level has had an adverse impact on BCG vaccine administration, as required syringes are not always available, even though there are adequate stocks of BCG vaccines procured by the national government.

> *"There is a major problem with the procurement of syringes by county governments. Most of them have not done the procurement ….. We now have a situation where the BCG vaccines are available but they cannot be administered to children" – Respondent 1*

Prior to devolution, several deficiencies existed in vaccines management[52]. Key among these challenges were deficiencies in: vaccines clearance at the airport; temperature monitoring; storage capacity at sub-county stores; stock management and distribution at sub-county levels; wastage tracking; and support supervision of healthcare workers. Since then several improvements have been made. According to the Joint Appraisal Report (2015)[46] UVIS has, with support from UNICEF and CHAI, development of an electronic stock management system at all vaccine stores including sub-county stores (formerly district stores). Further, with support from KFW, UNICEF and CHAI, UVIS procured cold chain equipment for all the 290 sub-county stores.

Delays in procurement and distribution of vaccines have been reduced as procurement is handled by the UNICEF supply division (SD). The UVIS outsources clearing and distribution of vaccines from the national store up to regional store and this has improved the stock availability, clearance and management of supply chain at the national and regional store levels. county governments are responsible for picking up these vaccines from the regional stores to the sub-county stores.

Cold Chain Capacity

Capacity for vaccine storage at sub-county and health facility level is weak: The current refrigeration and freezing capacity at the Central store and the regional depots is sufficient to store adequate amounts of vaccines. However, according to a cold chain inventory report of 2016, about 25% and 39% of CCE at health facilities and sub-county depots are not suitable for vaccine storage[53] [54]. The cold chain inventory report identifies major gaps associated with lack of or insufficient equipment; obsolescence, poor mechanical conditions and lack of electricity in certain establishments. With the advancement of technology, new and more efficient cold chain technologies have emerged. There is therefore the need to fill existing cold chain gaps, carry out repairs of broken down equipment, and

[52] Kenya EVM Assessment – Findings and Recommendations of the Assessment Team. MoH. 2013
[53] national Cold Chain Inventory. national Vaccines an Immunization Program (NVIP). 2016
[54] Kenya Cold Chain Expansion and Replacement Plan. national Vaccines an Immunization Program (NVIP). 2016.

replace non-compliant equipment and equipment older than ten years. Installing supply solar-powered equipment to facilities not connected to the power grid will go a long way in ensuring quality of the vaccines.

Failure of county governments to allocated funding for maintenance of equipment limits the health workers capacity to offer quality immunization services. According to KII, to a large extent, there is lack funding by county governments for the maintenance of equipment and procurement of gas by county governments. This is a key challenge in healthcare facilities where the old gas driven refrigerators have not been replaced with modern solar driven and ice layered CCEs.

Cold Chain Capacity Improvements

Kenya has a cold chain capacity improvement plan whose implementation is estimated to cost USD 14,359,550 between 2017 and 2020. According to the Kenya Cold Chain Expansion and Replacement Plan[Error! Bookmark not defined.], full financing of the 2017-2020 Cold Chain Equipment Expansion and Replacement plan will require USD 14,359,550 (**Table 6**). Out of this amount, USD 13,586,956 was included in the Cold Chain Equipment Optimisation Platform (CCEOP) application that the Kenya government submitted to GAVI. This application is currently under consideration by GAVI.

Table 6. Summary of cold chain equipment expansion and replacement budget (2017 – 2020 in USD).

Item description		Year				Total cost
		2017	2018	2019	2020	
CCE expansion and replacement within the CCEOP application	Cold chain equipment	4,841,962	3,049,426	3,135,951	1,709,727	12,737,066
	Spare parts	51,740	32,576	34,916	19,418	138,652
	Temperature monitoring devices	193,687	93,058	114,974	309,518	711,238
CCE expansion and replacement outside the CCEOP		333,549	274,154	147,275	17,615	772,594
Grand total		5,420,939	3,449,215	3,433,117	2,056,278	14,359,550

Kenya needs to increase the current refrigeration capacity for it to accommodate new vaccines. According to the Kenya Cold Chain Expansion and Replacement Plan (KCCERP), the introduction of HPV, MR, MenA, Malaria and Influeza vaccines in Kenya will require that the current capacity of +2°C and +8°C refrigeration be increased by 45% to 50%. The KCCERP, which also presents the cold chain storage capacity gap, is considered the roadmap for the expansion of cold chain equipment in Kenya. (Figure 26).

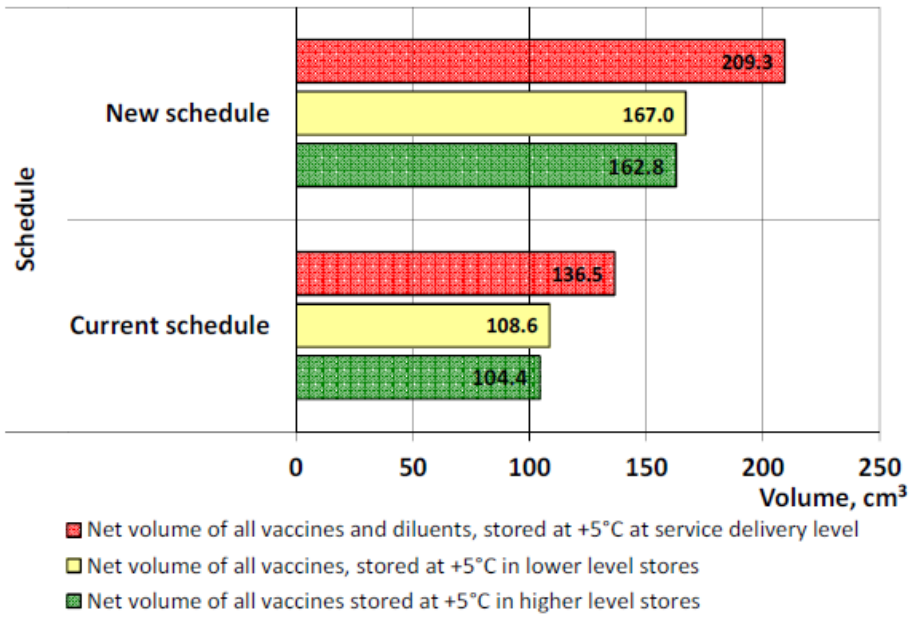


Figure 26. Impact of the introduction of new vaccines on the refrigeration demand in Kenya

5.1.6. Key Challenges of the Kenya Immunization Programme

Several challenges within the immunization program in Kenya have been identified by previous studies (**Table 7**).

Table 7. Summary of challenges to the Immunization program in Kenya

Thematic area	Challenge
Governance	• Lack of clarity on roles and responsibilities of the national and county governments. [46]
Financing	• Reduced funding for the immunization program nationally and county level due to the devolution of funds to the county governments. [46] • Inadequate funding for implementing social mobilization and communication activities. [46] • Delays in securing funds for procurement of new and routine vaccines Delayed disbursement of Rotavirus VIG grant in 2014 led to only partial introduction of rotavirus vaccine (depending on the ability of the counties to pre-finance vaccine introduction activities). This resulted in stock out of rotavirus vaccines for two weeks towards the end of 2014 at the health facility level. • Poor funding for maintenance of equipment and procurement of gas by county governments.
Human resource	• Deficiencies in the human resource capacity of healthcare facilities to offer immunization services. • Inadequate staffing both in absolute number and skills mix.[33]
Cold chain infrastructure	• Procurement of non-EPI fridges by the counties with potential to compromise vaccine potency[33] • Introduction of new vaccines exerting pressure on existing CCE infrastructure[33]
Supply chain management	• Weak supply chain management at the sub-county level due to inadequate knowledge and skills of newly employed managers and health workers. [46] • Discrepancies between paper-based stock ledgers and web-based SMT at national and regional stores primarily due to internet connectivity issues. [46]
Other challenges	• Emerging vaccination hesitancy creating a negative effect on building community trust [46] • Security challenges especially in northern Kenya leading to closure of health facilities in affected areas. [46]

A study by Saxenian *et al* [2] investigated challenges to sustainable immunization financing by reviewing experiences from 14 GAVI graduating countries (Indonesia, Sri Lanka, Angola, Bolivia, Azerbaijan, Honduras, Georgia, Congo, Moldova, Armenia, Mongolia, Guyana, Bhutan and Kiribati). According to that study the key challenges faced by graduating countries are:

- **Uncertainty related to vaccine prices once GAVI assistance ends:** With GAVI assistance, countries receive 'GAVI prices' (outlined in **Table A1**) negotiated on behalf of countries as a result of significant volumes of vaccines procured on behalf of low- and lower-middle-income countries and guaranteed funding by donors. Although manufacturers have indicated that they will continue to provide 'GAVI prices', the graduating countries expressed uncertainty about the changes in pricing of vaccines from manufacturers because the prices will be subjected to: global

market dynamics, the policies adopted by manufacturers and the vaccine presentation selected and procurement methods followed by each country.

- **Regulations related to using UNICEF SD for procurement of vaccines:** Transitioning countries are required to use procurement services of the UNICEF SD in order to benefit from negotiated 'GAVI prices'. This presents a challenge where there is incongruence in a country's regulations with regards to use of an external procurement agency like UNICEF SD. Saxenian *et al* [2] note that graduating countries will need to verify whether country regulations permit use of an external procurement agency when national budgets are involved, and potentially modify these country regulations. In the Kenyan context, this will not be a concern since the KEMSA has mandate in law to engage with organizations without and outside Kenya to procure medical products and vaccines as well as other medical products.
- **In-country technical capacity:** Countries generally lacked the specialized market knowledge and skills capacity to employ vaccine procurement methods that result in competitive prices for high quality products and to handle their own vaccine planning, advocacy and other technical tasks required for direct national vaccine procurement. For instance, countries under the study by Saxenian *et al* [2]were not conversant with the multiple presentations (number of doses per vial, cold storage requirements, recommended doses per child, etc.) available for a given vaccine and their financial implications. Notably the national regulatory agencies (NRA) presented capacity gaps in necessary regulatory processes that are essential if graduating countries choose to self-procure their vaccines whilst ensuring quality.

Considering that Kenya may graduate from GAVI's financing in a few years, the findings of Saxenian *et al* portend important implications for Kenya. Key among this is transition planning. Kenya need to avoid the mistakes of other countries that have gone ahead of it in the GAVI transition process. The MoH should lead in proactively developing projections of Kenya's funding requirement during the transition phase and beyond, and develop and implement a plan to advocate for increased resources from the government towards immunization coverage. The government commitment towards UHC presents a window of opportunity for the MoH to advocate for increased resources for immunization and health in general. Further, MoH should then compare these projections with government's expenditure on health to assess the feasibility of covering the additional costs from domestic sources. Where domestic financing will not be adequate (which is likely in the case of Kenya) MoH should lead considerations towards integrating the immunization of children under 5 years of age as a benefit within the NHIF while concurrently strengthening NHIF's revenue base and management efficiency to accommodate the immunization benefits package.

5.1.7. Sustainability of immunization in Kenya

Kenya needs to spend significantly more on vaccines than it is doing currently, and improve efficinecy for sustainable finacning to be realized. In 2014, UVIS in collaboration with WHO, UNICEF, GAVI and the Sabin Vaccine Institute conducted a review of immunization financing in Kenya and explored sustainable financing mechanisms. According to that review[55] budgetary allocation

[55] Kenya: Vaccines and Immunization Financing Review towards Predictable and Sustainable Immunization Programme Financing

to UVIS (including expenditures on the procurement of traditional vaccines, GAVI co-financing funds and operational costs), declined from 1.31% of the government's general expenditure on health (GGHE) in 2011 to 0.78% in 2016, and is projected to remain below the 1% mark between 2016 and 2019. Further, that report projects that if the existing GAVI vaccine co-financing mechanism is lost, the resource requirements for vaccines will constitute more than 4% of the governments general expenditures on health and 0.20%-0.25% of government general expenditures from 2015 (**Table 5**). On the basis of these projections, the authors argue that the financial burden on the government's healthcare budget will increase 8 times and is unlikely to be afforded (taking into account other competing public health priorities such as malaria, HIV/AIDS or TB) unless the share of healthcare budget in the government general expenditures increases substantially. Considering that the governments expenditure on health as a proportion of total government expenditure is on a downward rather than upward trend, it is unlikely that, with the current financing mechanisms, immunization financing in Kenya will be sustainable.

As the Kenyan economy grows, the costs of the vaccine programme will increase. Evidence from studies on other countries show that immunization expenditure increase as the economy grows. Nader et al[56] analyzed expenditure data from 68 out of 73 GAVI Phase-II lower- and lower-middle-income countries between 2006 and 2012 and showed that countries spent about USD 6.32 for every USD 100 in GNI increase from 2006 to 2012. This observation suggests that the Kenya government is bound to be faced with increasing cost of its immunization program. There is therefore need for the government to explore and actualize financing mechanisms that can meet this growing expenditure.

Delays and failure by the national and county governments to allocate funds towards procurement of vaccine related commodities, poses a health risk. The review found that no funds were allocated towards traditional vaccines in the 2013/14 and 2014/15 financial years at national government level and no evidence of any allocation at the county government levels either. It is worth noting that while funds are trasferred from the national to county governments, thse funds are not earmarked for health nor for immunization. Further, it is likely that it was not clear to county governments that they need to budget for the procurement of vaccine and related commodities.

Challenges in timely allocation of funding were also evident in relation to GAVI co-financing commitments. For instance, in 2013 the national Treasury did not allocate funds for traditional vaccines and for GAVI co-financing commitments on time (by October 2013) and was faced with the dilemma of either providing funds towards the GAVI co-financing commitments (and have the country stay without traditional vaccines) or procure traditional vaccines with a portion of the co-financing funds and be in default for GAVI co-financing commitments.. Thus the risks to the sustainability of vaccine financing is attributable more to inadequate planning and budgeting than to scarcity of financial resources [55]. While forecasting was always done on time, hardly were the results used to inform the MTEF or annual budgeting cycle.

[56] Nader, A.A., C. de Quadros, C. Politi, and M. McQuestion. 2015. "An analysis of government immunization program expenditures in lower and lower middle income countries 2006–12." Health Policy and Planning. 30(3): 281-288.

5.1.8. On-going studies

This study identified several ongoing studies whose scope relates to sustainable financing of the immunization program in Kenya that have been planned to start but are yet to start. These studies are:

1. Immunization financing: A study by UNICEF, through GAVI support
2. An efficiency study to be implemented by UNICEF and financed by GAVI[57];
3. An expenditure tracking study that is planned to start in 2017 funded by WHO and UNICEF.

5.1.9. Potential areas of future work

Some of the practical solutions to the challenges that exist within the immunization program which represent potential areas of future work include:

1. Support to UVIS and the CoG to develop better coordination mechanisms between UVIS and the county governments such that UVIS's work on forecasting and quantification of needles and syringes is communicated to county governments in a timely manner and used to inform procurement related decision making processes at the Counties. This will contribute towards averting stock outs of immunization needles and syringes in the future.

2. Support to UVIS to assess and document the number and expertise of METs in the country and to use this information to make decisions around Kenya's capacity to maintain CCEs and other medical equipment especially as efforts are underway to modernize CCEs in the country.

3. Technical assistance to MoH and county departments to conduct evidence based planning, linked to budgeting and monitor and report budget execution for immunization.

4. Technical assistance to the MoH and county departments of health to better package existing evidence and use for advocacy towards increased government spending on immunization and health in general.

[57] Personal communication from the Child Health Specialist UNICEF Kenya

5.2. HIV /AIDS

In summary

A) Key findings

- Kenya is experiencing a mixed and geographically heterogeneous HIV/AIDS epidemic, characterized by a generalized epidemic and a concentrated one among certain key populations
- Governance of the HIV/AIDS response is characterized by clarity on the roles and responsibilities of different government agencies working on HIV/AIDS – an attribute of the HIV/AIDS program that should be emulated by other priority health programs
- The HIV/AIDS response in Kenya is challenged by financing gaps of USD 9.1 billion
- Kenya government's expenditure on HIV/AIDS has increased but at a slower rate than the increase in Total Health Expenditure on HIV (THE_{HIV})
- Kenya's HIV/AIDS response is predominantly donor funded with 7 out of every 10 USD spent on HIV coming from donors
- Domestic financing towards HIV/AIDS stands at 21.7% of THE_{HIV} and falls short of National Aids Control Council (NACC) strategic target of 50%
- There is limited evidence on the efficiency of the Kenyan HIV/AIDS response but comparison of antiretroviral therapy coverage across LMICs suggests that Kenya is comparatively more efficient than most other countries with comparable income.
- Financing requirements for the Kenyan HIV/AIDS response is projected to grow to KES 135.2 Billion by 2024. Considering that the government's expenditure on health as a proportion of total government expenditure is on a downward trend, it is unlikely that, with the current financing mechanisms, HIV/AIDS financing will be sustainable.
- Kenya's HIV/AIDS response and its transition to sustainable financing mechanisms has been precluded by several challenges including: lack of a systematic transition planning for the HIV response; lack of a systematic appraisal of financing options for sustainable financing; and the unpredictability of donor funds.
- Proposals put forward to transition the HIV/AIDS program to sustainable financing mechanisms include: establishment of a HIV/AIDS Trust/Investment Fund; Incorporation of HIV/AIDS care and treatment as a benefit under the NHIF (although the issue of sustainability within the current levels of premiums is not clear); and increasing the fiscal space for HIV/AIDS treatment by introduction of new or increased taxation in sectors of the economy that have grown the most after Kenya's economy was re-based e.g. real estate, earmarking 2% of government's ordinary revenue for HIV/AIDS, introduction of local (county-level) tax in counties with high HIV/AIDS burden to fund the HIV/AIDS response, and financing the HIV/AIDS response through debt
- Proposal based on the establishment of ring-fenced funds for HIV is fundamentally flawed and unlikely to be successful because: it advances the priority nature of the HIV programs and will not lead to integration of HIV/AIDS into the health system; does not incorporate any risk-pooling mechanism; is unlikely to secure Treasury's support; and will result in comparatively more funding for HIV/AIDS (considering that funds are already ring-fenced for HIV/AIDS within the Global Fund co-financing mechanism) relative to other diseases that are equally if not more pressing for the county.

B) Key recommendations

- National and county governments need to review the revenue generating potential and sustainability of the proposals put forward to transition the HIV/AIDS program to sustainable financing mechanisms.
- The national and county governments need to liaise with key donors (e.g. USAID and PEPFAR) to establish what transition plans and timelines these donors are working with in terms of future reductions (if any) in funding allocations towards Kenya's HIV/AIDS response.

5.2.1. Epidemiology of HIV/AIDS in Kenya

Kenya is experiencing a mixed and geographically heterogeneous HIV epidemic, which is comprised of a generalized epidemic among the general population and a concentrated one among certain key populations: According to the NACC, the prevalence of HIV/AIDS among adults in Kenya reached a peak of 10.5% in 1995 and 1996, and declined by about 40% to reach approximately 6.7% in 2003[58]. Subsequent estimates of HIV/AIDS prevalence have reported a temporal decline. The Kenya AIDS Indicator Survey (KAIS) of 2007, the Kenya Health and Demographic Survey of 2008 (KDHS 2008) and KAIS 2012 reported HIV/AIDS prevalence of 7.6%, 6.4% and 5.6% respectively (**Figure 26**). While these data suggest that the prevalence of HIV/AIDS has been on a downward trend, estimates by UNAIDS, show an increased prevalence estimated to be 5.9% in 2015[59] (**Figure 27**).

[58] Kenya AIDS Strategic Framework 2014/15 – 2018/19
http://nacc.or.ke/wp-content/uploads/2015/09/KASF_Final.pdf
[59] http://aidsinfo.unaids.org/

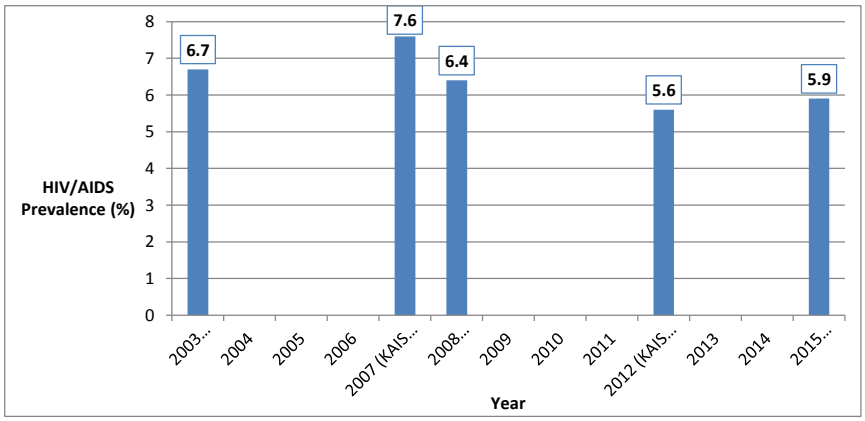


Figure 27. Prevalence of HIV/AIDS in Kenya between 2003 and 2015.
The figure shows the prevalence of HIV/AIDS (y-axis) between 2003 and 2015 (x-axis).
Source: KDHS 2003; KDHS 2008; KAIS 2007; KAIS 2012; UNAIDS
Authors' own illustration.

Disparities exist across gender, age and geographical location. The prevalence of HIV/AIDS has been disproportionate across the gender divide with the prevalence being consistently higher among women as compared to men[58]. For instance, out of the 1.4 million people aged 15 years and over who were living with HIV/AIDS in 2015, 830,000 (approximately 60%) were women[58]. HIV/AIDS prevalence is highest in the 25 – 44 age bracket[58]. There are significant variations in the prevalence of HIV/AIDS across counties, ranging from 0.2% in Wajir to 25.7% in Homabay. The burden of HIV/AIDS in Kenya is concentrated in a few counties. Ten counties that had the highest prevalence in 2013 (Homabay, Siaya, Kisumu, Migori, Kisii, Turkana, Mombasa, Nairobi, Busia and Nyamira) were responsible for about 65% of the overall prevalence of HIV/AIDS in Kenya in 2013[58]. Similarly, there are significant differences in the number of new HIV infections across the 47 counties in Kenya. An analysis in 2014 found that 55% of all new HIV infections occurred in just nine out of the 47 counties[60]. These counties include: Homabay, Siaya, Kisumu, Nyamira, Nakuru and Bomet.

5.2.2. Governance of the HIV/AIDS response

There is clarity on the roles and responsibilities of different government agencies working on HIV/AIDS: The national Aids Control Council (NACC) is responsible for policy development, coordination of partners, communication and advocacy, resource mobilization and management of the national AIDS management information system while the national AIDS and Sexually Transmitted

[60] Kenya HIV Prevention Revolution road map: count down to 2030. Nairobi: Kenya Ministry of Health; 2014

Infections Control Programme (NASCOP) was established to coordinate HIV/AIDS service delivery across Kenya. Following the devolution, the NACC and NASCOP have assumed the role of coordinating the national HIV/AIDS response; overseeing the development and implementation of policies and guidelines; and mobilizing resources for the HIV/AIDS response. Overall, the national government through MoH, NACC and NASCOP oversees policy, resource mobilization, advocacy aspects of Kenya's HIV/AIDS response while county governments manage service delivery.

5.2.3. Financing for HIV/AIDS in Kenya

Financing for HIV/AIDS in Kenya is predominantly donor-dependent: In FY 2015/16 72% of the KES 73.1 billion (USD 896.2 million) total health expenditure on HIV/AIDS (THE_{HIV}) was financed by donors, up from 51% in FY 2009/2010. Apart from donors, financing for HIV/AIDS comes from the government's own resources (representing 21.7% and 6.4% of THE_{HIV} respectively). The treatment of HIV/AIDS is not provided for as a benefit under the NHIF. These resources are utilized in support of facility infrastructure, human resources, and commodities needed to mount the national response. Additionally, the GOK through NASCOP leads the process to devise, revise, and issue guidelines on how health related HIV/AIDS services should be implemented at the facility and community level.

Kenya government's expenditure on HIV/AIDS has increased but at a slower rate than the increase in Total Health Expenditure on HIV (THE_{HIV}): A review of the temporal trends in the financing of HIV/AIDS in Kenya shows that the total health expenditure on HIV/AIDS (THE_{HIV}) has increased consistently over the past 10 – 17 years (**Table 8** and **Figure 28**). Notably, the government's expenditure on HIV/AIDS has increased but at a slower rate than the increase in THE_{HIV}.

Table 8. Temporal trends in HIV/AIDS financing.

	2005/06	2009/10	2012/13	2013/14	2014/15	2015/16
GDP (USD million)	18,700	37,000	50,400	55,100	61,400	63,400
GDP per capita (USD)	530	942	1185	1261	1368	1377
HIV/AIDS prevalence rate	5.1%	6.3%	5.6%	6.0	6.0	5.9
THE (KES millions)	135,630	163,395	233,959	-	-	-
THE_{HIV} (KES millions)	36,206	40,335	43,664	59,367*	73,324*	73,094*
Proportion of THE_{HIV} from government*	-	21.1	20.2	18.3	17.9	21.7
Proportion of THE_{HIV} from the private sector (including households)*	-	28.2	7.4	6.3	5.4	6.4
Proportion of THE_{HIV} from donors*	-	50.7	72.4	75.4	76.7	72.7
HIV/AIDS spending as a % of THE	26.6	24.4	18.7	-	-	-
HIV/AIDS spending as a % of GDP	1.2	1.3	1.3	-	-	-
Expenditure on HIV (KES millions)*						
National and county governments			8,554	10,836	13,132	15,835
For-profit institutions and corporations			1,256	1,319	1,385	1,454
Households' funds			2,306	2,421	2,542	2,669

	Not-for-profit institutions	2,379	3,023	3,629	4,415
	government of Japan	1,493	-	-	-
	government of United Kingdom	2,733	517	213	48
	government of United States	41,039	38,291	44,776	40,400
	The Global Fund to Fight AIDS, Tuberculosis and Malaria	1,646	2,654	7,320	7,991
	UN Agencies	272	305	326	281

Adapted from NHA 2012/2013 and Kenya national AIDS Spending Report (2012/13 – 2015/2016)[61,62]
*Estimated from expenditure data presented in the Kenya national AIDS Spending Report (2012/13 – 2015/2016)

[61] Kenya national AIDS Spending Report (2012/13 – 2015/2016). MoH.
[62] Kenya national AIDS Spending Report (2012/13 – 2015/2016) is based on data from the NHAs as well as data generated from 14 counties that were randomly selected from the 47 counties in Kenya. The data from the 14 counties was then used to reconstruct the overall spending on HIV in Kenya. Due to this methodology (which differs from that adopted by the NHAs) the estimates reported in the Kenya national AIDS Spending Report (2012/13 – 2015/2016) are not in perfect congruence with the estimates provided by the NHAs.

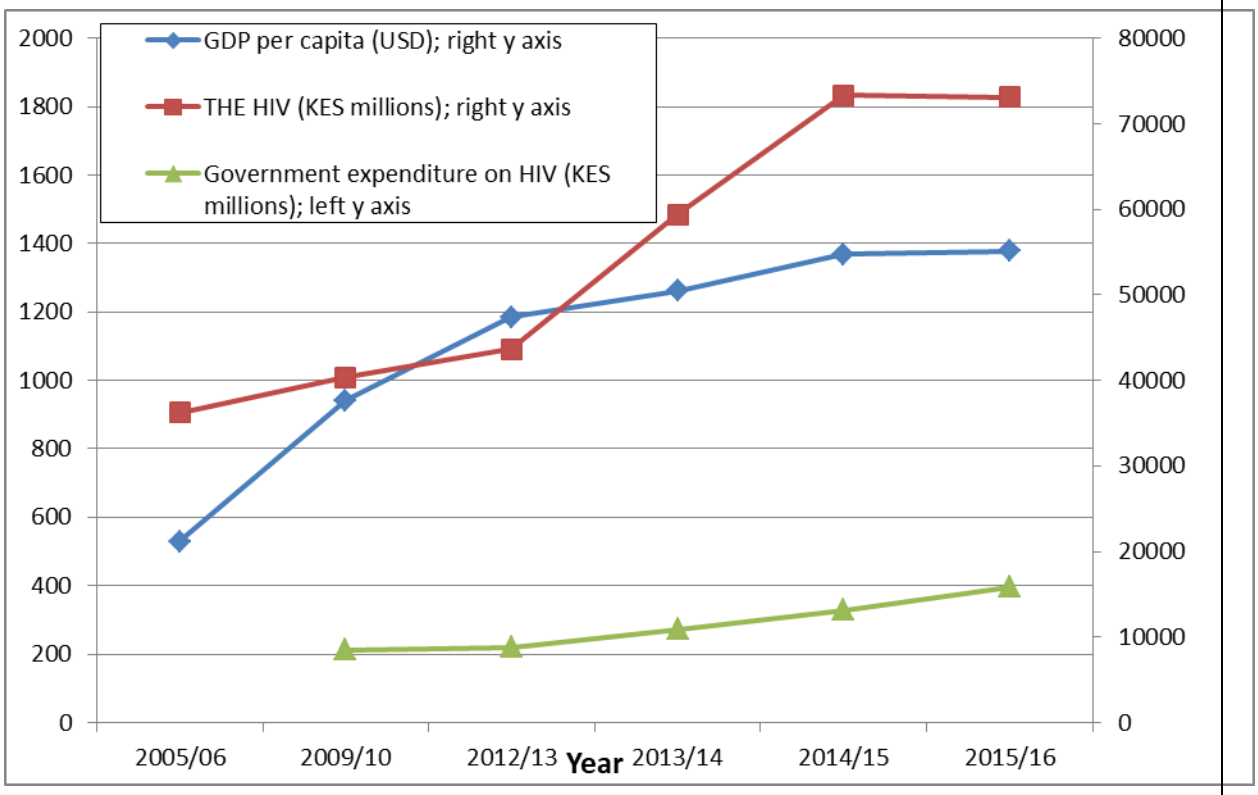


Figure 28. Temporal trends in financing for HIV/AIDS in Kenya.

A closer analysis of the temporal trends in THE_{HIV} reveals that increases in THE_{HIV} have been largely driven by increases in funds from donors (**Table 12** and **Figure 28**). The proportion of THE_{HIV} that is contributed by donors has increased remarkably from 51% in FY 2009/10 to 72% in FY 2015/16. Over the same time period, the proportion of THE_{HIV} contributed by the government has remained fairly constant at about 20% while that contributed by the private sector has declined from 28% FY 2009/10 to 6.4% in FY 2015/16. This observation suggests that economic growth in Kenya (as measured by GDP per capita) has not resulted in an increase (in terms of proportion) in the government's contribution to the total health expenditure on HIV/AIDS in Kenya.

The most recent estimates on HIV/AIDS spending in Kenya show that the country spent approximately KES 73 billion on HIV/AIDS in FY2015/16[Error! Bookmark not defined.]. The government of the United States (USG), largely through PEPFAR, represented the single largest contributor towards this expenditure (62% of the total expenditure). Domestic government and private sector (including households) financing contributed about 21.7% and 6.4% of the total expenditure on HIV/AIDS respectively. A World Bank Group – commissioned study on the financial sustainability of HIV/AIDS four countries in sub-Saharan Africa showed that in Kenya the treatment of the disease imposes a large financial burden on afflicted households. These households spend on average seven times more on inpatient and outpatient care than households free from the disease[63].

The dominance of USG as a funding source is also evident when expenditure on HIV/AIDS is stratified based on the main broad categories of interventions (**Table A2**) as well as by service delivery channels (**Table A3**). A similar distribution of expenditure is evident across the earlier years and is described in the Kenya national AIDS Spending Report (2012/13 – 2015/2016). Overall, the bulk (64%) of expenditure on HIV is made towards care and treatment. Out of the expenditure made towards care and treatment, the bulk of the expenditure was made towards purchase of antiretroviral therapy (**Table 9**).

[63] Ricardo Bitran and Hui Wang. Financial Sustainability of HIV/AIDS and other Universal Health Coverage interventions and in four countries in Sub-Saharan Africa. 2015

Table 9. Expenditure on care and treatment (millions of KES)

	2012/13	2013/14	2014/15	2015/16	Total	% total
Provider- initiated testing and counselling (PITC)	598	1,618	792	698	3,706	2.4%
Antiretroviral therapy	11,950	12,136	23,927	24,463	72,475	47.1%
Nutritional support associated to ARV therapy	260	192	322	579	1,353	0.9%
Home-based care	1,514	1,026	758	240	3,538	2.3%
Care and treatment services not disaggregated by intervention	15,193	16,942	20,062	20,470	72,666	47.3%
Total Care and treatment	29,515	31,913	45,862	46,449	153,739	100%

Analysis of the expenditure on HIV in terms of the financing agents[64] involved revealed that international purchasing organizations are the main financing agents in the provision of HIV interventions in the country. The share of the expenditure on HIV that has been channeled through these agents has declined over time while the share taken up by public agents has increased (**Table 10**).

[64] The Financing agents refer to entities that manage and use the funds for payment or purchase of health services, medical supplies and other HIV and AIDS related activities.

Table 10. Breakdown of spending on HIV/AIDS by financing agents (millions of KES)

	2012/13	2013/14	2014/15	2015/16	Total
Public sector	12,032	13,014	19,957	22,735	67,738
Ministry of Health and county Health Department	8,437	10,802	12,638	15,251	47,127
Other ministries (national government)	250	217	171	36	675
Parastatal organizations (KEMSA, NACC)	3,346	1,995	7,147	7,448	19,936
Private sector	5,941	6,763	7,556	8,538	28,799
Private households' (out-of-pocket payments)	2,306	3,023	2,542	2,669	10,540
Not-for-profit institutions (other than social insurance)	2,379	1,319	3,629	4,415	11,742
International purchasing organizations	43,705	39,590	45,811	41,820	170,925
Multilateral agencies managing external resources	198	134	175	115	621
International not-for-profit organizations and foundations	43,507	39,456	45,636	41,705	170,304
Total	61,679	59,367	73,324	73,094	267,463

Government needs to increase its expenditure on HIV/AIDS four-fold. Heavy reliance on donor funding has a significant implication on financial sustainability of the HIV/AIDS response. Since a significant proportion of HIV/AIDS financing in Kenya comes from external sources, successful transition of the country towards sustainable financing mechanisms will require the mobilization of significant amounts of domestic finances (equivalent to at least KES 53 Billion on the basis of FY2015/16 data from the Kenya national AIDS Spending Report (2012/13 – 2015/2016)). This means that the government's expenditure on HIV/AIDS will need to increase at least 4 times It is unlikely that, with the current financing mechanisms and the likely reduction in donor funding, HIV/AIDS financing in Kenya will be sustainable.

Efficiency of HIV/AIDS spending in Kenya

While there are several studies on sustainable financing of HIV/AIDS (**Table A4**), there is limited documentation of the efficiency of the Kenyan HIV/AIDS response. The relative absence of efficiency studies may be, in part, due to lack of consensus on a common metric against which efficiency of the HIV/AIDS response can be measured. Unit costs of providing HIV/AIDs services in health facilities in Kenya vary by a factor of up to 40[65].

The Kenya AIDS Strategic Framework (KASF 2014/2015 – 2018/2019) incorporates estimates on efficiency gain in its analysis of future financial requirements for the HIV/AIDS response. According to the report, Kenya HIV response can potentially realize savings of up to USD 406 Million by 2024[58] (**Table 11**). These efficiency gains[66] can be realized through:

- Implementation of on-the-job training using harmonized training curriculum, thus reducing training costs by up to 70%
- Rationalization of laboratory samples collection systems to reduce costs associated with laboratory referrals
- Maximizing the input of healthcare workers and reducing absenteeism
- Integration of HIV/AIDS, RH and MNCAH health services
- Better coordination of implementing partners to align to country priorities, reduce duplication of effort and double counting of results.

[65] Wang'ombe, et al., (2013) Optimizing the Response of Prevention: HIV Efficiency in Africa (ORPHEA) – Presentation of Results, presented at HIV Efficiency & Effectiveness (E2) Meeting, November 11, 2013, Panafric Hotel, Nairobi

[66] It is important to note that while KASF (2014/2015 – 2018/2019) presents data on efficiency gains, the report does not present information on the methodology or framework, nor the assumptions made when computing efficiency gains.

Table 11. Projected potential efficiency gains Kenya's HIV/AIDS response. All amounts in USD millions. Adapted from KASF (2014/2015 – 2018/2019)

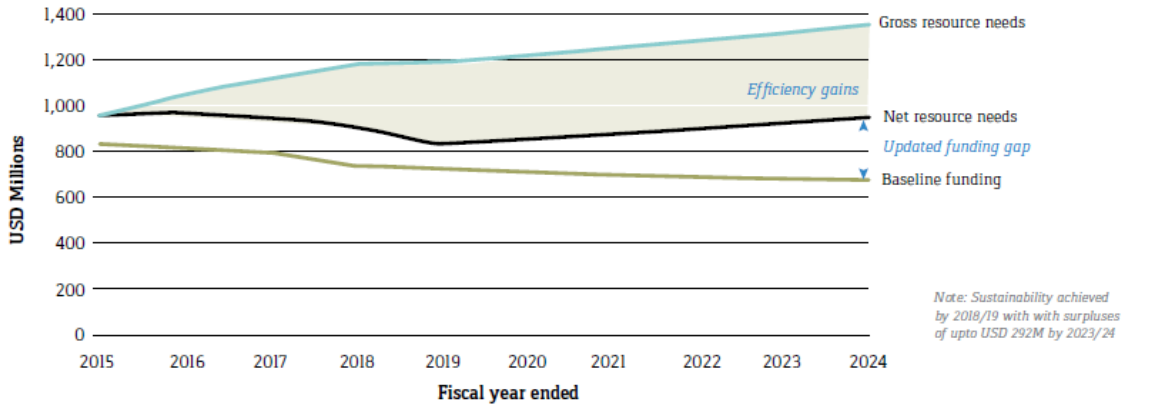
	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Gross revenue needs	956	1049	1115	1176	1190	1212	1249	1283	1317	1352
Efficiency gains		79	167	265	357	363	375	385	395	406
Net revenue needs	956	971	948	911	833	848	874	898	922	946

The Oxford Policy Management estimates that Kenya could achieve twice as much output with the same amount of resources spent on HIV[67], while a recent study commissioned by NACC showed that Kenya can increase output from HIV spending by about 60% and 30% when efficiency is measured using Data Envelope Analysis and Stochastic Frontier Analysis techniques respectively[68]. While the study doesn't allude to potential areas where savings can be realized, clearly, there is room to increase fiscal space for HIV spending through spending more efficiently. The study estimates that Kenya could achieve twice as much output with the same amount of resources in its HIV response. This implies that the efficiency of the HIV response in Kenya is not optimal and that the fiscal space for HIV could be expanded by improving the efficiency of HIV programmes.

Financing gaps in the Kenyan HIV response

The KASF 2014/2015-2018/2019 estimates that USD 5,486.4 million in total gross resources is required for HIV/AIDS for the five-year period - increasing from USD 956.2 million in 2014/15 to USD 1,190.4 million in the final year of the framework. The gross financial resource requirements are projected to increase from USD 1190 Million in 2018 to USD 1352 Million in 2024 (**Figure 29 and Table 11**). It is estimated that up to 30% of the resource needs can be raised through improved technical and allocative efficiency, thus reducing the resource gap to, for example, USD 946 million by 2024.

[67] Oxford Policy Management. Susutainable Financing for AIDS in Kenya. 2011.
[68] Awiti and Mwabu (2016). Efficiency of HIV/AIDS Spending in Kenya.



	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Gross resource needs	956	1,049	1,115	1,176	1,190	1,212	1,249	1,283	1,317	1,352
Efficiency gains	-	79	167	265	357	363	375	385	395	406
Net Resource needs	956	971	948	911	833	848	874	898	922	946

Figure 29. Gross and net financing requirements to implement KASF 2014/2015 – 2018/2019 in USD Million.

Note: Adapted from the Kenya AIDS Strategic Framework (2014/2015 – 2018/2019)

NACC in collaboration with WHO, UNAIDS and the Kenya Vision 2030 Board commissioned a study on the implications of the rebasing of Kenya's GDP on the HIV response in Kenya[69]. . The report indicated that there will be little change in donor support for Kenya's HIV and AIDS response in the immediate term (2-3 years). However, prospects for the long term (5-10 years) are uncertain.

While existing policies do not portend a risk of Kenya losing donor support, other factors influencing donor support should be taken into account. For instance, between 2010 and 2013, PEPFAR funding to Kenya decreased by 50%[69]. Although this reduction is not due to the rebasing, it has important implications for Kenya's ability to sustain the gains made in HIV treatment and prevention. While it is appreciated that support from PEPFAR will, at best, remain constant and, at worst be phased out, there are no clear guidelines on the timeline associated with these changes.

> *"Donor funding for HIV has flat lined for several years now …. It is known that donor funding (through Global Fund, UNAIDS, USAID etc.) will be phased out at some point in time but it is not clear what time this will be." – Respondent 2*

[69] Sustainable financing of HIV and AIDS response in Kenya: Kenya's Lower Middle Income (LMIC) Transition and the Need to Protect Investments in HIV and AIDS

5.2.4. HIV/AIDS treatment coverage

WHO now recommends universal ART for all people who are infected with HIV[70] [71]. At the end of 2015, UNAIDS estimated that in Kenya 900,000 people infected with HIV were on treatment with ART – representing a coverage rate of approximately 60%[72]. While this coverage rate is below the target anticipated by the 90-90-90 strategy and falls short of the WHO recommendation of 100% coverage, it compares favorably against the global average which was estimated at 41% and 46% in 2015 by the Global Burden of Disease Study and UNAIDS[72] respectively.

5.2.5. Challenges

This study identified several challenges in Kenya's HIV/AIDS response and the transition towards domestic financing. They include:

- Lack of a systematic transition planning for the HIV/AIDS response. Although there is a common understanding that HIV/AIDS resources will decline in the near future, there hasn't been any plans for the transition and it remains unclear if and when donors will reduce their funding allocation towards Kenya.

- Limited (if any) transition of evidence to practice. Several studies have been conducted to assess the financing of HIV/AIDS in Kenya. However, there have been limited efforts towards assessing and exploring the alternative financing options that are available to the government to bridge the financing gaps that reductions in international financing will create. This is partly due to lack of standardized methodologies, which make it difficult for government to synthesize and translate findings into policy and practice.

"While several studies (costing and efficiency studies) have been done by different players, there has not been a systematic assessment of the options available to MoH and government. In this sense, there are no clear recommendations of what options (e.g. financing options) that MoH and government should pursue first, second etc. to bridge the financing gap that will result of the phasing out of donor funds." – Respondent 2

"Kenya does not have a repository of unit costs related to HIV/AIDS services. Implementing partners working in the HIV/AIDS space are using different unit costs. In this light, there is no agreed upon indicators against which to measure efficiency of HIV/AIDS programs in Kenya. I think we will need to assess the different indicators used in literature." – Respondent 2

[70] WHO. Consolidated guidelines on the use of antiretroviral drugs for treating and preventing HIV infection. June, 2013. http://www.who. int/hiv/pub/guidelines/arv2013/download/en/
[71] WHO. Consolidated guidelines on the use of antiretroviral drugs for treating and preventing HIV infection: what's new. November, 2015. http://www.who.int/hiv/pub/arv/policy-brief-arv-2015/en/
[72] UNAIDS Global AIDS Update. 2016. http://www.unaids.org/sites/default/files/media_asset/global-AIDS-update-2016_en.pdf

5.2.6. Sustainability options

Previous studies on the sustainable financing of Kenya's HIV/AIDS response have demonstrated that the projected funding gap is considerable, representing in some years between 0.5% and 1.5% points of GDP[62]. These studies have gone ahead to propose mechanisms to bridge these gaps and attain sustainability. Several ideas for the sustainable financing of the Kenyan HIV/AIDS response have been put forward (**Table 12**): (i) incorporation of part of the cost of HIV/AIDS treatment under the NHIF[73] (ii) establishment of a HIV Trust/Investment Fund., funded largely through earmarking 2% of general revenue; and (iii) New or increased taxation in sectors of the economy that have exhibited the largest growth, e.g. real estate, mining and manufacturing. The incorporation of the cost of HIV/AIDS treatment under the NHIF, as proposed in KASF 2014/2015 – 2018/2019 was estimated to cost USD 90 million (including overheads), representing 19% NHIF's revenue in 2014/2015 fiscal year (at least as estimated by the Oxford Policy Management report of 2011)[67]. Considering that this percentage is high (especially since NHIF should cover other disease areas as well) and the fact that the USD 90 million only covers treatment (and not prevention and other HIV-related interventions), it is unlikely that NHIF in isolation will suffice. In light of this, KASF 2014/2015 – 2018/2019 also proposed the establishment of a HIV Trust/Investment Fund.

The HIV Trust/Investment Fund was proposed to be set up within NACC as mandated under the Public Finance Management Act and to be ring-fenced for the HIV/AIDS response at least initially after which it can be used to finance emerging diseases such as non-communicable diseases and ultimately contribute towards financing UHC. According to KASF 2014/2015 – 2018/2019, the fund was to be capitalized by diverse funding sources including: debt-swap options; AIDS lottery; Corporate Social Investment (CSI); infrastructure HIV resources; health bonds; a portion of interest from dormant funds; and organized informal sector contributions. KASF 2014/2015 – 2018/2019 does not elaborate how these funding sources will actually be realized.

Opponents to the idea of setting up a HIV Trust/Investment Fund that is specifically ring-fenced for the HIV/AIDS response argue that this will only advance the priority nature of HIV/AIDS programs and will not lead towards integration of priority programs into the health system. Further, they argue that it may not be legal or fair to earmark public funds for a single disease and leave out other diseases that are equally if not more pressing for the county. Further, concerns have been raised about NACC's legal mandate to establish and run a trust fund. It has been argued that NACC, as it legally constituted through a legal notice is not a bon-a-fide parastatal or authority. In this regard, NACC cannot even legally convene stakeholders or establish and run a trust fund. The concerns around the ring-fencing of public funds for one disease (HIV/AIDS) have been bolstered by the fact that already through the Global Fund's

[73] NACC, UNAIDS and OPM (2012) Sustainable financing for HIV/AIDS in Kenya.: Oxford Policy Management: Oxford

funding mechanism; the Kenya government is "forced" to allocate funds specifically to HIV/AIDS. Stakeholders interviewed in this study reported that allocation of public funds should be made towards health and not towards specific diseases.

> *"Global Fund's policy on counterpart financing is forcing Kenya to keep money specifically for HIV, Malaria etc. This denies allocation to other disease areas …. Global Fund's counterpart financing should be made to health in general and not just HIV" – Respondent 4*

Table 12. Summary of proposed sustainable financing option for HIV/AIDS in Kenya

Sustainability strategy	Study/ report	Merits	Demerits	Overall recommendation
Establishments of a HIV Trust/ Investment Fund that is capitalized through: - **Debt-swap options;** - **AIDS lottery;** - **Corporate Social Investment (CSI);** - **Health bonds;** - **A portion of interest from dormant funds;** - **Informal sector contributions.**	KASF 2014/2015 – 2018/2019	• Ring-fenced funds for HIV/AIDS that hedge the Kenyan HIV response against competing healthcare needs	• Will advance the priority nature of HIV programs and will not lead towards integration of priority programs into the health system. • Will result in comparatively more funding for HIV/AIDS (considering that funds are already ring-fenced for HIV within the Global Fund co-financing mechanism) relative to other diseases that are equally if not more pressing for the county (e.g. growing burden of NCDs). • No risk-pooling mechanism • Unlikely to secure endorsement from Treasury because establishment of dedicated funds fragments the revenue pool and makes Treasury less agile in the re-allocation funds depending on pressing national needs that may arise in the future.	• Need to re-direct funds aimed at capitalizing the HIV Trust/Investment fund to strengthen NHIF to enable NHIF offer benefit packages that cover HIV/AIDS as well as other priority programs
Incorporation of HIV/AIDS care under NHIF	KASF 2014/2015 – 2018/2019	• Move away from priority nature of HIV programs and integrates HIV response in to the wider health system. • Provides risk pooling (largest	• May be compromised by inefficiencies and funds mismanagement at NHIF	• Most promising long term solution not just for HIV/AIDS but other priority programs as well • Strategy has been

		risk pool in Kenya)		implemented by other countries that have transitioned to lower middle income category e.g. Ghana. In Ghana, there has been a targeted effort to fund premiums and services from designated providers for HIV patients which has enhanced financial protection (through a UHC mechanism) for HIV patients in Ghana. • Need to improve operational efficiency at NHIF • Need to explore providing tax-based revenue to the NHIF
Increasing the fiscal space for HIV treatment in the short term by: - **New or increased taxation in sectors of the economy that have grown the most after Kenya's economy was re-based e.g. real estate** - **Earmarking 2% of**	Sustainable financing of HIV and AIDS response in Kenya: Kenya's Lower Middle Income (LMIC) Transition and the Need to Protect Investments in	• Provides short-term mitigation against the risk of (i) reducing donor funding for HIV and (ii) negating gains made so far in Kenya's HIV response	• Increasing taxation on some sectors of the economy (e.g. real estate) may slow down these sectors and result in long-term negative effects e.g. loss of employment • Unlikely to secure support of Kenyans especially if new taxation is introduced	• Only viable as a short term plan before transitioning HIV/AIDS financing to a more sustainable mechanism e.g. NHIF

government's ordinary revenue for HIV - **Introduction of local (county-level) tax in counties with high HIV burden to fund the HIV response;** - **Financing the HIV response through debt** - **Exploring mechanisms of generating efficiency gains in HIV/AIDS service delivery**	HIV and AIDS.

5.2.7. On-going studies

There are several studies related to sustainable financing of HIV/AIDS in Kenya that are either planned to start in 2017 or are ongoing (**Table 13**).

Table 13. On-going studies on sustainable financing of HIV/AIDS in Kenya

Study/ Initiative	Funder	Scope of work	Status
Sustainability of HIV, TB, and Malaria Programs in the Context of Transition in Kenya	Global Fund	Investigate Kenya's sustainability and transition options and public finance management (PFM) processes at the national and county levels with a focus on HIV/AIDS, Malaria and TB programs.	On-going
Sustainability Plan for AIDS, TB and Malaria Programs	Global Fund to Fight AIDS, Tuberculosis, and Malaria	Investigate: How adequately have HIV/AIDS, TB and Malaria programs in Kenya have benefitted from public resources Bottlenecks to adequate resource allocation to health and to the HIV/AIDS, TB and Malaria programmes Long-term prospects for sustainable domestic funding for the HIV/AIDS, TB and Malaria programmes?	On-going
Study on HIV/AIDS in relation to Universal Health Coverage and Vision 2030	UNAIDS	Investigate feasibility of attaining UHC targets in Kenya.	Planned to start in 2018
A costing study on HIV/AIDS service delivery	UNAIDS	Establish the cost of HIV/AIDS service delivery in Kenya to inform plans for alternative sustainable financing of HIV/AIDS.	On going

E2 (efficiency and effectiveness solutions)	Supported by NACC and USAID's Health Policy Project (HPP)	Investigate mechanisms to reduce long term cost of HIV/AIDS service delivery while maintaining quality standards, treatment outcomes and coverage of HIV/AIDS prevention, treatment and care.	On-going work

5.3. Malaria

In summary

A) Key findings

- The malaria program is challenged by significant financing gaps. Implementation of the Kenya Malaria Strategy is precluded by a financing gap of approximately KES 32.8 Billion between FY2014/15 and FY2018/19. This gap is likely to increase due to: requirement by Global Fund for Kenya to provide 40% rather than 20% co-financing; the fact that Kenya is yet to attain its malaria service delivery targets; and the likely need to procure newer (and possibly more expensive) treatments for malaria in case resistance against artemether-lumefantrine (AL) continues to grow unabated considering that resistance to AL has already emerged and is thought to be on the increase.
- Financing for malaria in Kenya comes from: the private sector (mainly represented by households), the public sector and donors. These three sectors contributed 48%, 43% and 9% of $THE_{Malaria}$ in FY 2012/13 respectively.
- The government's expenditure on malaria has remained fairly constant at an average of KES 11.2 Billion over the past 5 years (FY 2009/10 – FY 2015/16) despite Kenya's consistent economic growth
- Financing requirements for malaria is projected to grow to KES 60.5 Billion by 2018. Considering that the GHE as a proportion of total government expenditure is on a downward, it is unlikely that, with the current financing mechanisms, malaria financing in Kenya will be sustainable.
- Kenya's malaria response and its transition to sustainable financing mechanisms has been precluded by several challenges, key among them being: inadequate funding; and the lack of clarity on roles and obligations of the national and county governments
- Previous attempts to transition the financing and procurement of some malaria commodities from donors to government as well as from the national to county governments have been sub-optimal
- There are qualitative and quantitative deficiencies in the collection, warehousing and use of health data for decision-making. These deficiencies affect the reporting of data onto the DHIS2 software yet the malaria program relies heavily on the DHIS2 software to make decisions around the financing of specific malaria interventions and procurement of malaria treatments and diagnostic products

B) Key recommendation

- Provide clarity on the role of national and county government in relation to prevention and treatment of malaria in high risk population.
- The national and county governments need to explore mechanisms to improve the collection of quality data, reporting, warehousing and use of data on the DHIS2 software. These mechanisms may include regular data quality reviews and capacity building activities conducted jointly by the two levels of government.

5.3.1. Epidemiology of Malaria in Kenya

Eighty percent of Kenya's population is at risk of malaria infection: According to the Kenya Malaria Indicator Survey 2015 (KMIS 2015) [74], the epidemiology of malaria is characterized by four epidemiological zones that are differentiated based on the prevalence of malaria, altitude, temperature and rainfall patterns. These four epidemiological zones are: highland epidemic prone areas; endemic areas (lake and coast); Semi-arid, seasonal malaria transmission areas; and Low risk malaria areas.

The highland epidemic prone areas are characterized by seasonal malaria transmission and considerable temporal variation across years. The seasonal spikes in malaria transmission are attributable to climatic changes that maintain temperatures above 18°C and augment vector breeding. During this spikes in transmission, case fatality rates can increase and be ten-fold the rates in endemic areas. The endemic malaria zones of Western and Coastal Kenya experience stable malaria transmission. In these zones, malaria transmission is intense and perennial throughout the year.

The northern and south-eastern parts of Kenya are classified as semi-arid and seasonal malaria transmission zones. These zones experience short but intense malaria transmission seasons that are driven by high temperatures and pools of water that collect in the rainy season. The central highlands of Kenya are categorized as low risk malaria areas. These areas characterized by low temperatures that do not favor completion of the sporogonic cycle of the malaria parasite in the vector.

Overall, about 80% of the Kenyan population is at risk for malaria[75]. Among the at-risk population, 27% (approximately12 million people) live in areas of epidemic and seasonal malaria transmission. An estimated 28 million people live in endemic areas, and over a quarter (approximately11 million people) live in areas where parasite prevalence is estimated to be equal to or greater than 20%.

5.3.2. Governance of the Malaria response in Kenya

The national government oversees policy, resource mobilization, advocacy aspects of Kenya's malaria response while county governments manage service delivery: At the national government level, the malaria response is governed by the Revised Kenya Malaria Strategy 2014 – 2018 (KMS 2014 – 2015)[76] and its performance is tracked against the Kenya Malaria Monitoring and Evaluation Plan 2009 - 2018[77]. KMS 2014 – 2018 outlines six strategic

[74] https://dhsprogram.com/pubs/pdf/MIS22/MIS22.pdf
[75] Noor et al. 2012. The epidemiology and control profile of malaria in Kenya: reviewing the evidence to guide the future vector control.
[76] Revised Kenya Malaria Strategy 2014 – 2018 (KMS 2014 – 2015)
[77] Kenya Malaria Monitoring and Evaluation Plan 2009 - 2018

objectives[78] with the aim to achieve a 66% reduction in malaria morbidity and mortality between 2009 and 2018.

At the national level, the malaria response is coordinated by the national Malaria Control Program (NMCP) (**Figure 30**). Key functions at the national level include health policy, national referral health facilities and reference laboratories, disease surveillance, monitoring and evaluation, health commodity procurement for large donor-funded programs including malaria, capacity building and technical assistance.

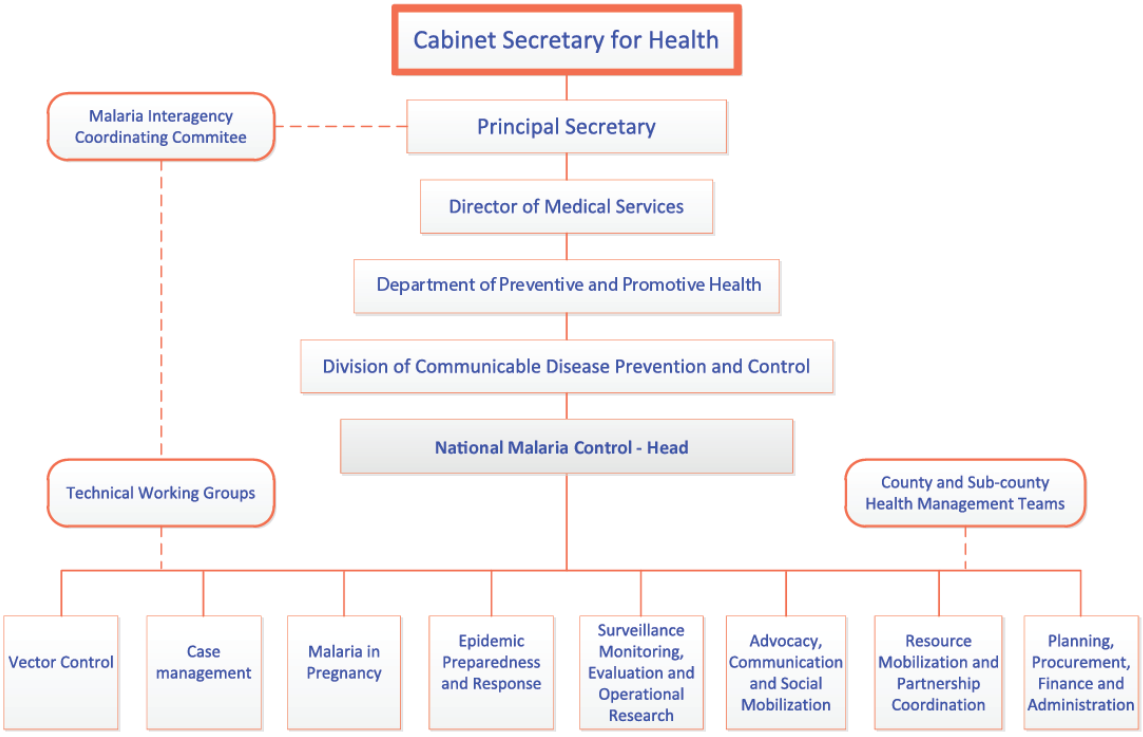


Figure 30. Organizational structure of the NMCP.
Adapted from the Revised national Malaria Strategy (2014 – 2018).

Six technical teams composed of technical staff drawn from various units within MOH constitute the NMCP: (1) vector control, (2) case management, (3) malaria in pregnancy, (4)

[78] These strategic objectives are: (i) To have at least 80% of people living in malaria-risk areas using appropriate malaria preventive interventions; (ii) To have 100% of fever cases which present to a health worker receive prompt and effective diagnosis and treatment; (iii) To ensure that 100% of malaria epidemic-prone and seasonal-transmission counties have the capacity to detect and the ability to respond to malaria epidemics; (iv) To ensure that all malaria surveillance, monitoring and evaluation, and program indicators are routinely monitored, reported, and evaluated in all counties; (v) To increase utilization of all malaria control interventions by at-risk communities in Kenya to at least 80%; (vi) To improve capacity in coordination, leadership, governance and resource mobilization at all levels towards achievement of the malaria program objectives.

epidemic preparedness and response, (5) advocacy, communication and social mobilization, and (6) surveillance, monitoring and evaluation (M&E), and operational research (OR). Similarly, the NMCP convenes, on a quarterly basis, six primary technical working groups (TWGs aligned to the six technical teams. The TWGs have the capacity to form sub-committees for more concentrated discussion or work around a particular issue. The sub-committees report back through the primary working group structure.

In addition, NMCP convenes the Malaria Interagency Coordination Committee (MICC) biannually and on an ad hoc basis on behalf of the Director of Preventive and Promotive Services. The MICC includes other MoH divisions and units, non-governmental organizations, community-based organizations, private sector, partners and donors. Each county health department should have a unit for preventive and promotive services, where the county malaria control program and malaria control coordinator belong. These programs at the county include health services management, communicable and vector-borne disease control and management, and environmental health services.

5.3.3. Financing for the Malaria response in Kenya

Approximately 50% of the malaria response is financed by the private sector: Financing for malaria comes from three main sources namely: the private sector (mostly represented by households); government's revenue; and international bilateral donors such as the President's Malaria Initiative (PMI) and international multilateral such as the Global Fund to Fight AIDS, Tuberculosis, and Malaria (GFATM). The private sector contributed 48% of $THE_{Malaria}$ in 2012/13, while public sector and donor contributions accounted for 43% and 9% of $THE_{Malaria}$ respectively.

A review of the temporal trends in the financing of malaria in Kenya shows that the total health expenditure on Malaria ($THE_{Malaria}$) decreased from KES 41 billion in FY2009/10 to KES 22 billion in FY2013/14 (**Table 14**). This remarkable decrease of approximately 46% in $THE_{Malaria}$ is due to a drop in government's contribution to $THE_{Malaria}$ from KES 12.7 billion in 2009/10 to KES 9.9 billion in 2012/13 and a drop in contributions from donors from KES 2.763 billion in 2009/10 to KES 898 million in 2012/13. Overall, the government's expenditure on malaria has remained constant despite consistent economic growth (**Figure 31**). It is important to note that there are significant gaps in data on the malaria program, as demonstrated by the gaps in data as outlined in **Table 14**.

Table 14. Temporal trends in malaria financing. All figures in KES millions. Adapted from NHA reports and data from NMCP

	2005/06	2009/10	2012/13	2013/14	2014/15	2015/16
GDP (USD millions)	18,700	37,000	50,400	55,100	61,400	63,400
GDP per capita (USD)	530	942	1185	1261	1368	1377
THE (KES millions)	135630	163395	233959	59367	73324	73094
$THE_{Malaria}$ (KES millions)	-	41024	22953			
Government expenditure on malaria (KES million)	-	12677*	9870*	5948**	17117**	10998**
Proportion of $THE_{malaria}$ from government*	-	30.9	43	-	-	-
Proportion of $THE_{malaria}$ from the private sector (including households)*	-	51.9	47.9	-	-	-
Proportion of $THE_{malaria}$ from donors*	-	21.8	9.1	-	-	-
$THE_{malaria}$ as a % of THE	-	33.3	9.8	-	-	-
$THE_{malaria}$ as a % of GDP	-	1.36	0.68	-	-	-

*Estimate calculated on the basis of figures presented in NHA reports

** Data shared with the authors of this report by the NMCP

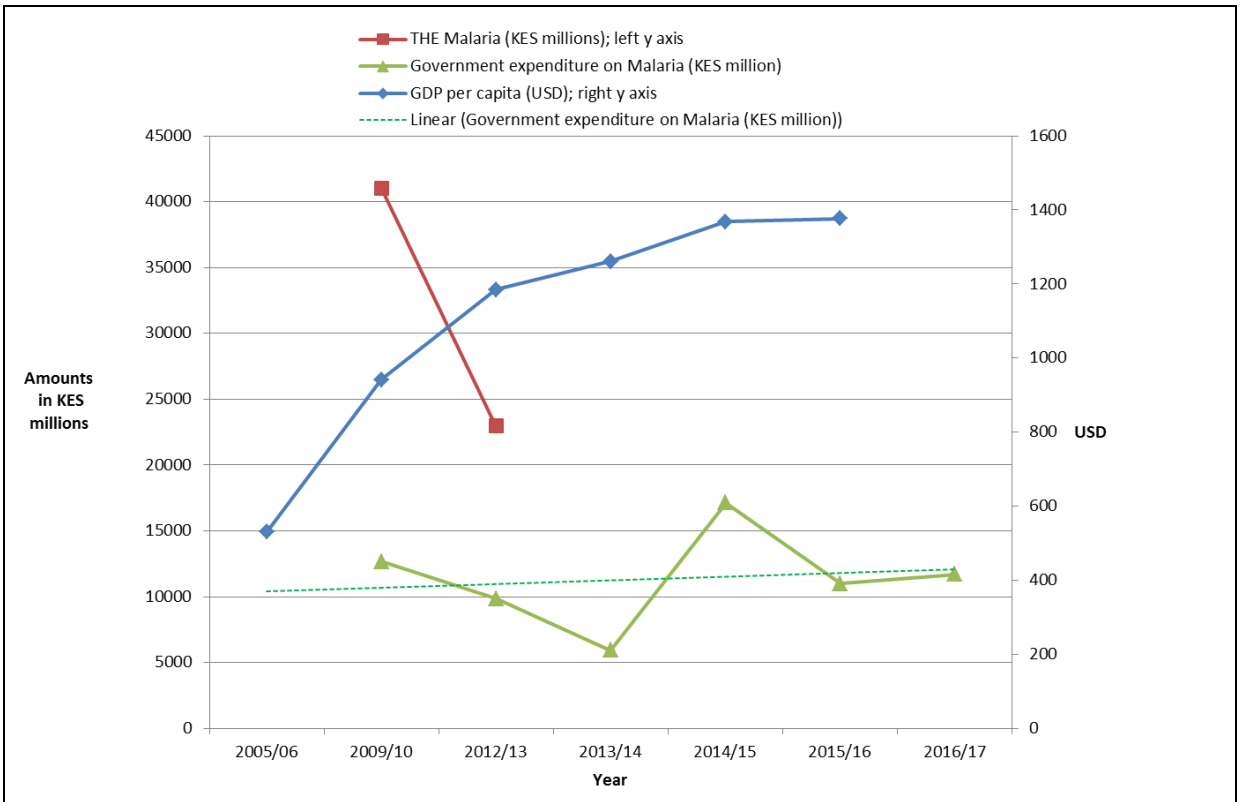


Figure 31. Temporal trends in financing for Malaria in Kenya.
Green dotted line represents the overall linear trend of the government's expenditure on malaria.

The KMS 2014-2018[76] provides a costing of the malaria interventions outlined in the strategy as well as a forecast of future financing requirements. The costing of the KMS 2014 -2018 was done using two methods - an input based costing (IBC) approach and the OneHealth Model[79]. According to the IBC and OneHealth Model approaches, full implementation of the KMS 2014 – 2018 is expected to cost KES 57.5 billion and KES 60.5 billion respectively (**Table 15 and Table 16**).

Table 15. Estimated cost of implementing KMS 2014 – 2018 according to the IBC approach. Adapted from KMS 2014-2018. Amounts in KES millions.

Objective	FY 2014/15	FY 2015/16	FY2016/17	FY 2017/18	Total
1	9,477	4,166	6,364	7,906	27,914
2	4,847	4,189	4,934	4,363	18,334
3	44	20	20	20	104
4	459	224	228	394	1,307
5	857	363	368	358	1,947
6	1,799	1,877	1,994	2,218	7,889
Total	17,484	10,842	13,911	15,260	57,498

Table 16. Estimated cost of implementing KMS 2014 – 2018 according to the OneHealth Model. Adapted from KMS 2014-2018. Amounts in KES millions.

Requirements	FY 2014/15	FY 2015/16	FY2016/17	FY 2017/18	Total
Intervention cost	13,856	8,413	8,543	6,641	37,454
Programme management	6,051	5,391	4,945	6,695	23,083
Total requirements	19,908	13,804	13,489	13,336	60,538

Kenya's malaria response is characterized by significant financing gaps: Considering the available resources, the funding gap for implementing the KMS 2014 – 2018 over a five-year period is estimated at KES 29.9 billion and KES 32.8 billion according to the IBC and OneHealth Model approaches respectively.

[79] In the input-based approach, the cost of inputs required to achieve the targets set out in a strategic plan are simply summed up. The OneHealth model is based on the OneHealth Tool - a software designed to inform national strategic health planning in low- and middle-income countries. Unlike the input-based approach that takes a narrow disease-specific approach, the OneHealth Tool attempts to link strategic objectives and targets of disease control and prevention programmes to the required investments in health systems.

5.3.4. Malaria Service delivery

Kenya is yet to attain malaria service delivery targets set out in its national strategy: Service delivery within the Kenyan malaria response is guided by the KMS 2014 - 2018[76]. Strategies to support the achievement of the revised KMS objectives include adopting a multi-sectoral approach to malaria control, decentralizing malaria control operations to counties, tailoring interventions to the prevailing epidemiology, and strengthening the malaria control performance monitoring and evaluation system[76]. The main interventions proposed in KMS 2014 – 2018 are: vector control (which includes provision of long lasting insecticidal nets); prevention of malaria in pregnancy by provision of intermittent preventive treatment (IPTp); malaria case management (including diagnosis and treatment); and advocacy, communication, and social mobilization (**Table 17**).

Table 17. Summary of interventions proposed in KMS 2014 – 2018

Intervention	Target set by KMS 2014 – 2018	Achievement as at 2015
Vector control	80% of at-risk population using appropriate malaria prevention interventions, including ITNs and IRS by 2018.	52% of at-risk population was using appropriate malaria prevention interventions, including ITNs and IRS.
Malaria in pregnancy (MIP)	100% of women receiving one or more doses of intermittent preventive treatment for pregnant women (IPTp) by 2018	51% of women received one or more doses of intermittent preventive treatment for pregnant women (IPTp)
Case management	100% of all children under 5 years with suspected cases of malaria receiving parasitological diagnosis by microscopy or RDT and prompt treatment with artemisinin combination therapy (ACT) by 2018	39% of all children under 5 years with suspected cases of malaria received parasitological diagnosis by microscopy or RDT and prompt treatment with artemisinin combination therapy (ACT)
Advocacy, Communication and Social Mobilization	Increasing and strengthening advocacy, communication and social mobilization of all malaria control interventions by at-risk communities to at least 80% by 2018	Not reported

5.3.5. Sustainability of the Malaria response in Kenya

There has not been systematic evaluation of sustainable financing mechanisms to bridge present and future funding gaps in Kenya's malaria response: While costing and forecasting of financing requirements for the malaria program has been done and reported and the existence

of significant gaps in the financing of malaria demonstrated, this review did not find documented evidence of work towards finding sustainable financing mechanisms to bridge the forecasted financing gaps. The NMCP is currently working towards submitting Kenya's application for funding from the Global Fund for the 2018 – 2020 funding cycle[80].

According to KMS 2014-2018, the full implementation of the KMS 2014 – 2018 is currently precluded by a financing gap of between KES 29.9 Billion and KES 32.8 billion. It is not clear how this gap will be addressed and the KMS 2014 -2018 does not identify potential sources of funding. Further, the forecasted financing gap only covers the 5-year period between 2014 and 2018. It is likely that the financing gap beyond 2018 will be larger because of several reasons:

- Requirement by Global Fund for Kenya to provide 40% co-financing (rather than the present 20%) in case Kenya as a result of the transition to middle income country status.
- Need to procure newer (and possibly more expensive) treatments for malaria in case resistance against artemether-lumefantrine (AL) continues to grow unabated. Resistance to AL has already emerged and is thought to be on the increase[81]
- Kenya is far from attaining malaria control, prevention targets that are set out in KMS 2014 -2018. For instance, while KMS 2014-2018 prescribes that 100% of all suspected malaria cases will receive a parasitological diagnosis by microscopy or malaria RDT and effective treatment AL by 2018, Kenya had only managed to put 25% of children under 5 years with confirmed malaria diagnoses under appropriate treatment with AL by 2015.

Previous attempts to fund malaria control interventions through domestic sources have been met with mixed outcomes. As already indicated, close to half of expenditure on malaria comes from households through OOP payments. In 2015, the government committed to take up the financing and procurement of injectable artesunate for the treatment of severe malaria. However, it should be noted that this transition to domestic financing has not been absolute since in 2016, PMI procured 500,000 vials of injectable artesunate to complement the procurement of this medication by the government of Kenya[82].

5.3.6. Challenges

The malaria program is faced with several challenges – key among them being the financing of the program. Sustainable financing of the Malaria response in Kenya is challenged by the fact that a significant proportion of funding for Malaria comes from households through OOP payment and a smaller proportion from external donors (**Table 18**) especially the US and UK governments. In spite of the high cumulative contribution from households and donors (approximately 51% of $THE_{Malaria}$), Kenya has consistently experienced gaps in the financing of its malaria response (**Figure 32**). Caution is called for in interpreting the data presented in Table

[80] Personal communication from the Planning Officer - NMCP
[81] Menard and Dondorp. 2017. Antimalarial Drug Resistance: A Threat to Malaria Elimination. Cold Spring Harb Perspect Med.
[82] Kenya Malaria Operational Plan FY 2016. PMI

26 because they are sourced from separate documents. Further, the contribution of government varies depending on the sources of data e.g. between data presented in the NHAs and data presented in financial documents from NMCP (**Table 18**). Nonetheless, despite discrepancies in specific data points, the overall trend shows that the Malaria response in Kenya is challenged by financing gaps (**Figure 32).**

Table 18. Summary of available resources and financing gap in Kenya's malaria response. Data sourced from NMCP's financial documents unless where otherwise stated. All figures in USD.

	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18
Total resource requirements	289.1	120.7	66.7	222.8	275.0	199.1	138.0	134.9	133.4
Available resources									
Government	0.822*	0.822*	0.822*	2.8	3.0	3.2	3.2	3.4	3.5
Global Fund	25.9	25.3				25.0			
PMI	37.7	36.0	36.0	36.0	36.5	32.4	32.4	32.4	32.4
DFID/WHO/PSI	17.8	15.3	15.3	15.3	2.3	25.6	21.4		
WHO/Gates	0.088	0.088							
UNICEF	0.03								
Pfizer Foundation/PSI	0.5	0.5	0.5						
Other funds					33.0	56.1	23.2	12.4	
Total available resources	82.99	78.04	52.66	54.14	74.77	142.32	80.27	48.15	35.93
Funding gap	206.19	42.65	14.05	168.68	200.21	56.76	57.77	86.74	97.43
						(96.50)	(65.0)	(73.2)	(93.56)

*Data from the NMS 2009 – 2017

Data in parenthesis is based on estimates presented in NMS 2014 – 2018.

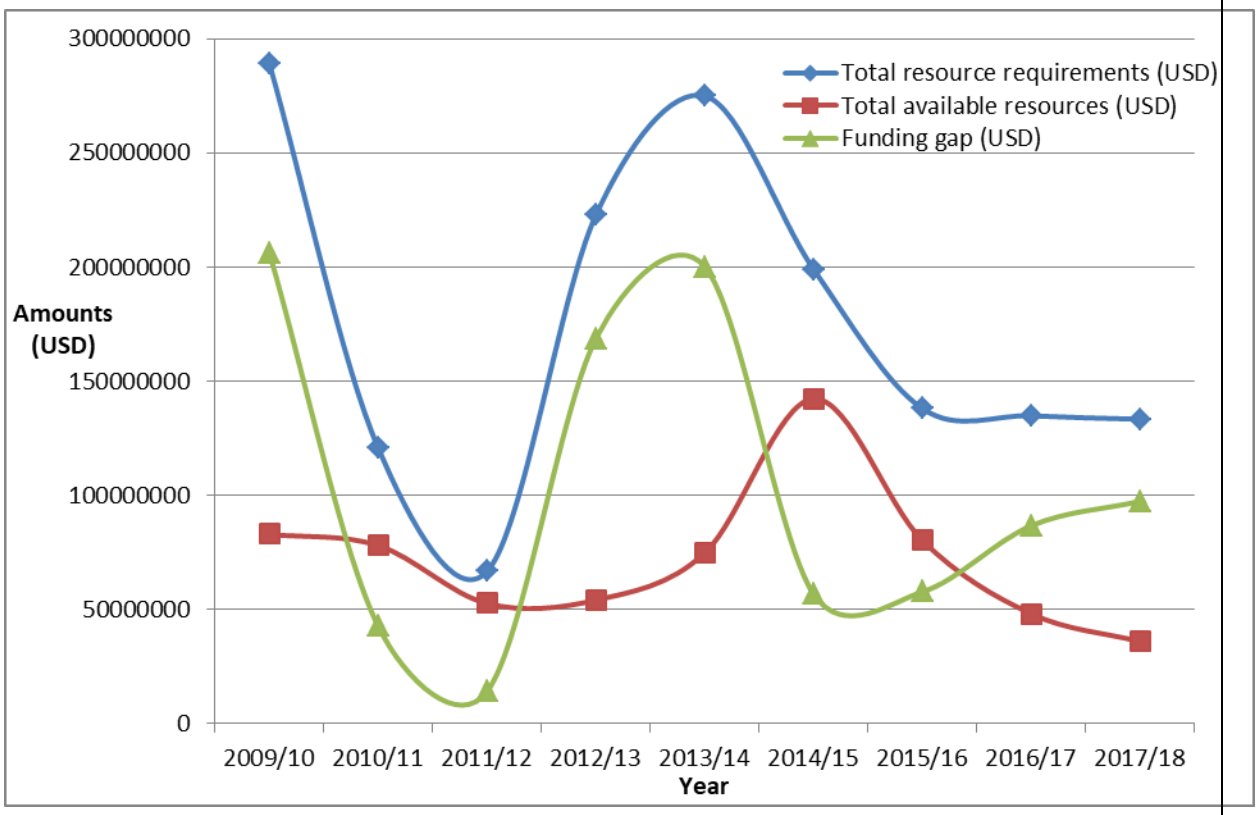


Figure 32. Temporal trends in available resources and financing gap in Kenya's malaria response.

The devolution is presenting challenges in service delivery for malaria and data management which in turn hampers efficient financial planning for the malaria response in Kenya. According to the NMCP, devolution has posed challenges for malaria control and treatment. For example, it was reported that attempts to have the county governments procure sulfadoxine-pyrimethamine (SP) for the prevention of malaria in pregnancy in 2015 were not successful and resulted in stock outs of the medication. Additionally, with the current governance structure, data entry into the DHIS2 is a function of county governments and relies on health record information officers on the county governments' payroll to regularly input malaria-related data into DHIS 2. The NMCP relies on the data in DHIS 2 in forecasting and quantifying the country's needs in terms of anti-malarial medication, rapid diagnostic test (RDT) kits. Further the NMCP uses data from DHIS2 to estimate financing requirements of the malaria program. There are qualitative and quantitative gaps in the data entered in to DHIS 2 and the NMCP has no mandate over the HRIOs whose task it is to ensure timely and accurate entry of data onto DHIS2. The NMCP is often forced to rely on incomplete and inaccurate data in its planning and decision-making.

"The program is at times unable to access malaria data for its planning and decision-making simply because the data has not been uploaded onto DHIS2. NMCP has no mandate over county government staff that should upload this data …. This frustrates our planning work" – Respondent 5

The sentiments of the programme are corroborated by a recent study on the completeness of malaria indicators reported through DHIS 2 in Kenya between 2011 and 2015[42]. Using a 5-year retrospective, longitudinal assessment of DHIS2-reported malaria data from January 2011 to December 2015 in Kenya, the analysis revealed that despite 59%-91% of the surveyed health facilities having malaria diagnostics capabilities between 2011 and 2015, data on the number of cases tested for malaria was not available in DHIS2 over this time period. Further, in 2015, only sparse malaria-test data for microscopy [11.5% for <5 years; 11.8% for ≥5 years] and rapid diagnostic tests (RDT) [8.1% for all ages] was reported. In the private sector, reporting of malaria-related data was even worse than the public sector.

5.3.7. On-going studies

This study established that there are several on-going studies that may be related to sustainable financing of the malaria response in Kenya

1. A study on Kenya's sustainability and transition options and public finance management (PFM) processes at the national and county levels. The study which focuses on the HIV/AIDS, Malaria and TB programs is being implemented by Results for Development (R4D) with funding from the Global Fund. In light of this on-going study, and in order to avoid duplication of work, this report recommends that HIV/AIDS, Malaria and TB programs should not be considered as priority programs in Phase 2 of the proposed analytical activity on sustainable financing for priority programs in Kenya.
2. At the time of the study, the NMCP was planning to conduct a Malaria Programme Review later on, which will also generate forecasts of malaria financing gaps beyond the 2017/2018 financial year.
3. Population Services Kenya was conducting a study that compares the cost-effectiveness of two approaches of distributing long lasting insecticide treated nets (LLINs). These approaches are mass-campaigns and routine distribution.
4. PricewaterhouseCoopers is exploring innovative public-private partnerships (PPPs) that would fill financial gaps in Kenya's malaria response.

5.4. Tuberculosis

In summary

A) Key findings

- Kenya is ranked among 30 high tuberculosis (TB) burden countries by WHO
- A recent TB prevalence survey estimates prevalence in Kenya as 558 per 100,000 population - approximately 52% higher than previously estimated.
- Government is the main funder of TB services, contributing half of the total health expenditure on TB (THE_{TB})
- The financing gap associated with the TB program over the FY2014/15 to FY2017/18 period has been estimated as KES 21.5 billion. However, this estimate is based on earlier prevalence rates, which was less than the current estimates.
- Despite increases in economic growth and recent increases in TB prevalence, the government's expenditure on TB has remained constant
- There are no empirical studies on the efficiency of the Kenyan TB response but comparison of TB treatment success rates across lower middle income countries suggests that Kenya is comparatively more effective than most other countries with comparable income and the treatment success rate in Kenya is higher than the average rate attained by lower middle income countries

B) Key recommendations

- The national Tuberculosis Leprosy and Lung Disease Program (NTLP) needs to revise the estimates of the funding gap associated with the TB program in light of the recent (2016) TB prevalence survey that puts the TB prevalence in Kenya at 558 per 100,000 population - approximately 52% higher than previously estimated.
- NLTP needs to liaise with county governments to explore mechanisms to bridge the funding gap (that will widen further) after the 2016 TB prevalence survey results are considered.

5.4.1. Epidemiology of Tuberculosis in Kenya

Kenya is ranked among 30 high TB burden countries: The WHO considers Kenya to be among the 30 high TB burden countries[83]. According to WHO's 2014 estimates, the prevalence of bacteriologically confirmed TB in Kenya was 266 per 100,000 population[84]. A recent TB prevalence survey[85] conducted by the NTLP[86] suggests that TB prevalence estimates from the WHO grossly under-estimate the burden in Kenya. According to that survey, TB prevalence in Kenya is 558 (455 – 662) per 100,000 adult population - approximately 52% higher than previously estimated. Importantly, the prevalence to case notification ratio is 3.5:1 translating to

[83] Global Tuberculosis Report. WHO. 2016
[84] Global Tuerculosis Report. WHO. 2015
[85] Kenya Tuberculosis Prevalence Survey report 2016
[86] http://nltp.co.ke/

40% missed TB cases annually. This pool of undetected and untreated TB cases contributes to the spread of TB considering that one untreated TB patient is estimated to infect 10-15 people. The highest burden of disease was in the 45-54 and 25-34 age groups, with a prevalence of 607 per 100,000 and 716 per 100,000 respectively.

A review of temporal trends in TB disease burden in Kenya shows that TB case notification increased from 11,000 (50/100,000) in 1990 to a peak of 116,723 (359/100,000) cases in 2007[83] with the increase being largely driven by HIV epidemic. Since 2008, TB case notification rates have declined steadily (**Figure 33**), largely due to the uptake of ART for HIV/AIDS. Considering the findings of the 2016 Kenya Tuberculosis Prevalence Survey Report, this declining trend may not be entirely accurate.

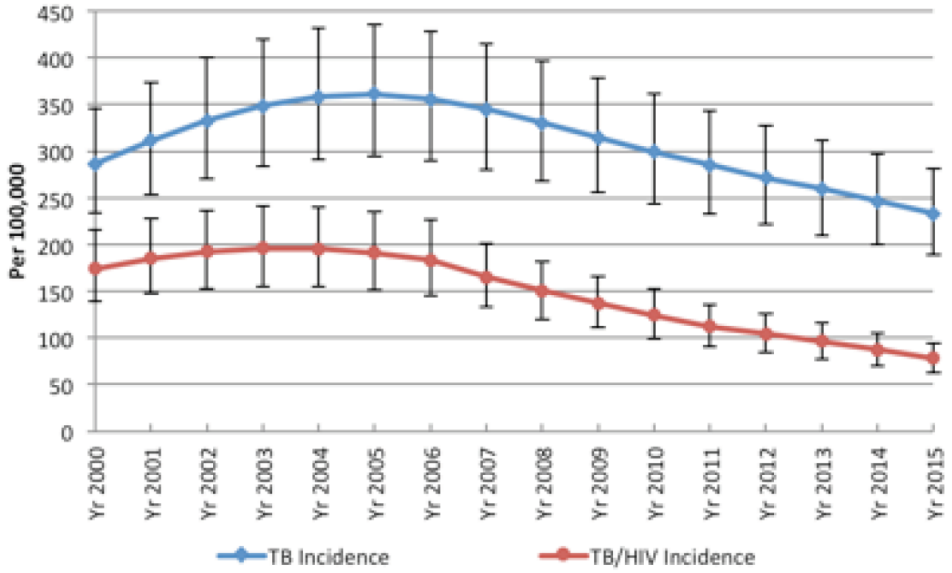


Figure 33. Temporal trends in TB disease burden in Kenya.
Adapted from the Kenya Tuberculosis Prevalence Survey Report (2016).

According to the 2016 national TB Prevalence Survey report[85], there is a significant TB-HIV co-infection in Kenya. The number of TB cases reported among people living with HIV increased between 1998– 2004, stabilized in 2006-2009 at approximately 2,750 cases per 100,000 population, and then declined to 1,962 cases per 100,000 population in 2012. Although a similar trend was observed among HIV negative TB patients, the decline rate was lower - from 320 cases per 100,000 population during 2005–2007 period to 231 cases per 100,000 population in 2012 (Figure 1.2). The decline in HIV associated TB in Kenya is largely attributed to the effective implementation of collaborative TB and HIV activities. In 2015, 97% of TB patients had a documented HIV test and antiretroviral therapy among HIV co-infected TB patients was 87%. HIV prevalence among TB patients declined from 60% in 2006 to 31% in 2015 (Ministry of Health, NTLD-Program, 2015)

The epidemiology of TB in Kenya is also characterized by a significant prevalence of multi-drug resistant (MDR) TB. According to the Drug Resistance Survey (DRS) of 2015, the

prevalence of MDR TB previously treated and new cases of TB was estimated to be 2.1% and 0.7% respectively[87].

There are challenges related to sustaining gains in TB prevention and control that may, at least in in part, be due to the devolution. Since 2008, there has been a decline in TB notification rates (**Figure 39** above). While it can be argued that this is due to a reduction in the burden of TB largely due to uptake or ARVs, the just released TB prevalence survey[85] suggests that the decline is likely due to lack of optimal service delivery. According to NLTP, the decline in TB case notification is likely due to poor transition of TB service delivery coordination from the national to the county level.

> *"Before devolution, the country was categorized into regions with each being headed by a regional coordinator. After devolution, the regions were abolished and the regional coordinators were replaced by 47 county coordinators …. The decline in TB case notification rates may be due to the change from the regional to the county coordination mechanisms" – Respondent 6*

5.4.2. Governance of the Tuberculosis response in Kenya

The NTLP is under the Division of Communicable Disease Prevention and Control in the Directorate of Preventive and Promotive Health Services of the Ministry of Health. The NTLP has the mandate of developing policies, setting technical standards and resource mobilization. At each county, NTLP is linked through the county TB and Leprosy Coordinators (CTLC), who provides technical and implementation support to 153 Sub-county TB and Leprosy Coordinators (SCTLC).

Technical and development partners contribute to policy matters on TB through seven technical working groups (TWGs) that meet quarterly. The TWGs report to the steering committee and come together under the TB Inter Agency Coordination Committee (TB-ICC).

5.4.3. Financing for Tuberculosis in Kenya

Financing for TB in Kenya comes from three main sources namely: the government's resources the private sector (largely through OOP by households); and donors, largely the US government and international multilateral such as the Global Fund to Fight AIDS, Tuberculosis, and Malaria (GFATM). According to the latest available NHA (NHA 2012/2013), the total health expenditure on TB (THE_{TB}) increased from KES 1.8 billion in 2009/10 to KES 3.1 billion in 2012/13 – an increase of nearly 50%. In the 2012/2013 financial year, approximately 50% of THE_{TB} came from the public sector while the private sector and donors contributed 27% and 23% of THE_{TB} respectively (**Table 20**). The GFATM is the largest source of external financing for TB.

[87] Fourth national Anti-Tuberculosis Drug Resistance Survey. NTLP –Program. 2016

The government's expenditure on TB increased from KES 507 million in 2009/10 to KES 1.54 billion in 2012/13; representing an increase of approximately 100%. According to prospective estimates of the government's expenditure on TB reported in the Kenya national Strategic Plan on Tuberculosis, Leprosy and Lung Diseases (2015 – 2018)[88], the government's expenditure on TB reduced to KES 1.146 million in 2013/14 and has remained at that amount to date (**Table 20**). Despite increases in economic growth (measured as GDP per capita) and recent increases in TB prevalence, the government's expenditure on TB has remained constant (**Table 20** and **Figure 34**).

[88] The Kenya national Strategic Plan on Tuberculosis, Leprosy and Lung Diseases 2015 – 2018

Table 20. Temporal trends in TB financing. All figures in KES millions. Adapted from NHA reports

	2005/06	2009/10	2012/13	2013/14	2014/15	2015/16	2016/17
GDP (USD million)	18,700	37,000	50,400	55,100	61,400	63,400	
GDP per capita (USD)	530	942	1,185	1,261	1,368	1,377	
TB prevalence rate (per 100,000 population)	350	320	300	283	266	-	558
THE (KES millions)	135,000	163,000	233,000	-	-	-	
THE $_{TB}$ (KES millions)	-	1,798	3,081	-			
Proportion of THE $_{TB}$ from government	-	28.2	50.1	-	-	-	-
Proportion of THE $_{TB}$ from the private sector (including households)	-	30.1	26.6	-	-	-	-
Proportion of THE $_{TB}$ from donors	-	41.6	23.3	-	-	-	-
HIV/AIDS spending as a % of THE	-	1.13	1.3	-	-	-	-
HIV/AIDS spending as a % of GDP	-	0.06	0.09	-	-	-	-
Expenditure on TB (KES millions)*	-			-	-	-	-
government		507	1,543	1,146*	1,146*	1,146*	1,146*
The Global Fund to Fight AIDS, Tuberculosis and Malaria	-	-	878.7	-	489.3**	-	-
USG / (TB Care or TB ARC)	-	-	298.7	-	196.4**	436.8**	-
AMREF	-	-	-	-	-	451.8**	-
CDC	-	-	72.6	-	38.9**	73.2**	-
JICA	-	-	-	-	-	33.9**	-
WBG	-	-	-	-	2.4**	-	-

*Data from the Kenya national Strategic Plan on Tuberculosis, Leprosy and Lung Diseases (2015 – 2018). Numbers refer to prospective availability of funds from the government *Data from WHO Global TB Report 2014[89] **Data from the NLTP annual reports of 2014 and 2015

[89] http://apps.who.int/iris/bitstream/10665/137094/1/9789241564809_eng.pdf

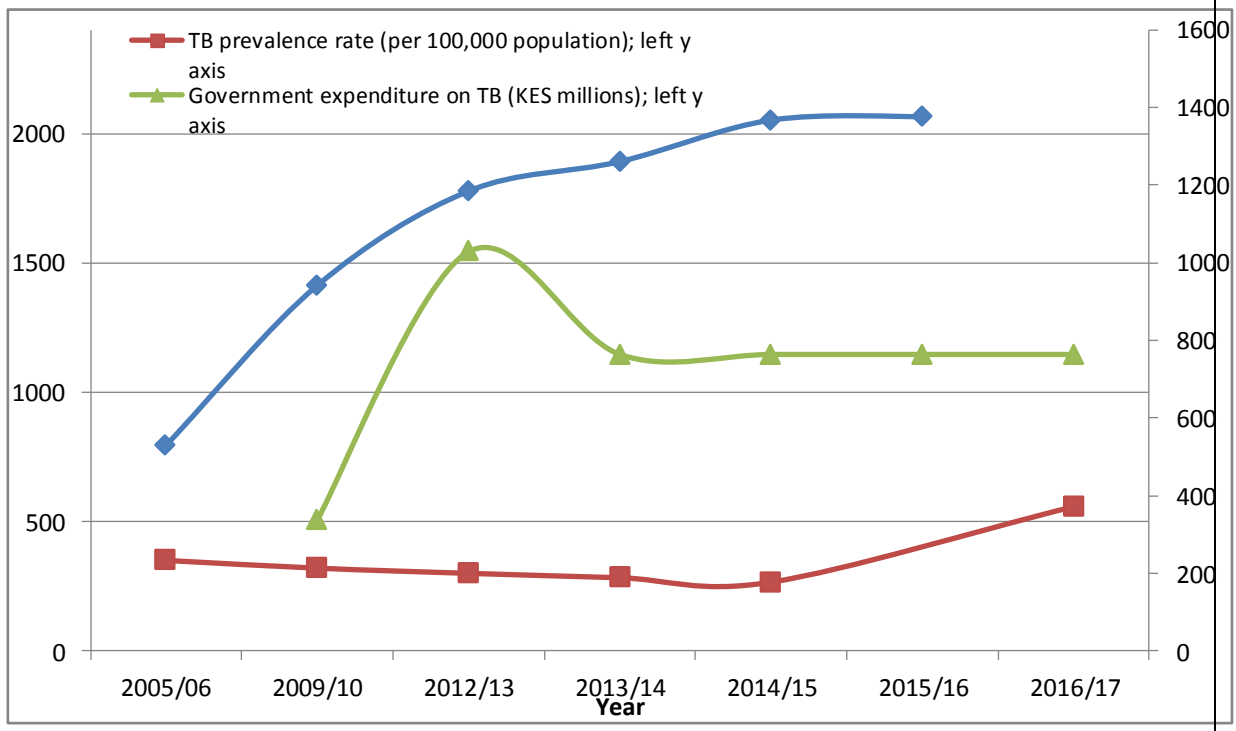


Figure 34. Temporal trends in governments expenditure on TB relative to TB disease burden and economic growth.
The peak in government expenditure on TB in FY2012/13 is likely to be a reflection of that the fact that the trend analysis is based on data points from different reports i.e. NHA reports and TB program annual reports.

There are significant financing gaps in the Kenyan TB response that are yet to be addressed. The full implementation of the Kenya national Strategic Plan on Tuberculosis, Leprosy and Lung Diseases (2015 – 2018) is challenged by a funding gap of approximately KES 21.5 billion (**Table 21** and **Figure 35**). This challenge is further compounded by the recent revelation that the true burden of TB in Kenya is twice as much as the disease burden estimates used to calculate the funding gap presented in Table 28 and Figure 31. This means that the true funding gap for TB is likely to be more than KES 21.5 billion. The implication of these observations is that government is unlikely to afford the cost of Kenya's TB response unless the share of healthcare budget in the government general expenditures increases substantially. Considering that the governments expenditure on health as a proportion of total government expenditure is on a downward rather than upward trend, it is unlikely that, with the current financing mechanisms, TB financing in Kenya will be sustainable.

Table 21. Summary of available resources and financing gap in Kenya's TB response. Data sourced from Kenya national Strategic Plan on Tuberculosis, Leprosy and Lung Diseases (2015 – 2018) where otherwise stated. All figures in KES million.

	2014/15	2015/16	2016/17	2017/18	Total
Total resource requirements	6,275	7,401	7,564	6,555	27,796
Available resources					
government	1,146	1,146	1,146	1,146	
Global Fund	736	680			
Other grants	150	150			
Total available resources	2,033	1,977	1,146	1,146	6,305
Funding gap	4,241	5,423	6,417	5,408	21,490

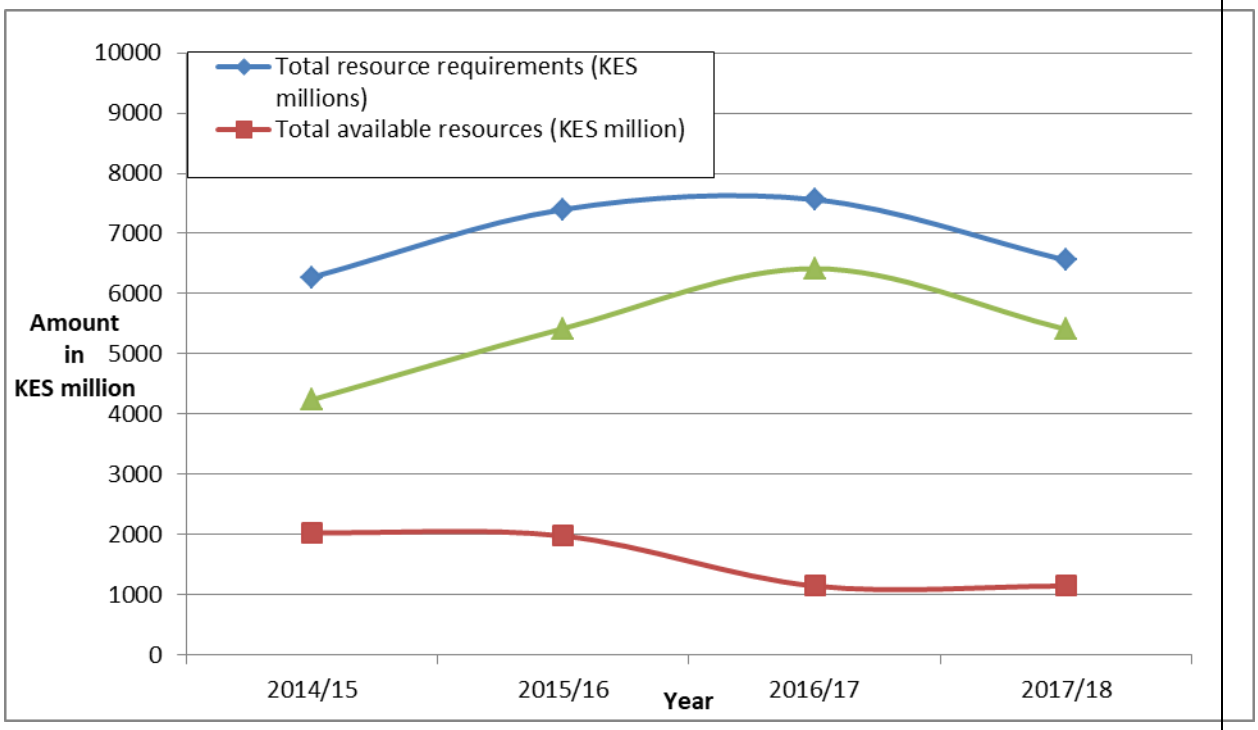


Figure 35. Temporal trends in available resources and financing gap in Kenya's TB response.

5.4.4. Sustainability of the Tuberculosis response in Kenya

This review did not find any studies that have systematically explored the sustainability of the Kenyan TB response. Nonetheless, the insights gathered in this review suggest that, as is currently financed, the TB response in Kenya is currently not sustainable despite the fact the approximately 50% of THE_{TB} comes from the public sector. This is because of several reasons. First, the financing gaps presented in the Kenya national Strategic Plan on Tuberculosis, Leprosy and Lung Diseases (2015 – 2018) are likely to be understated. Considering the recent prevalence estimates. This implies that the 'true' funding gap is much higher than is presented in the Kenya national Strategic Plan on Tuberculosis, Leprosy and Lung Diseases (2015 – 2018).

Secondly, moving forward, the financing gap associated with the Kenyan TB response is likely to increase because of:

- The requirement by Global Fund for Kenya to provide 40% co-financing (rather than the present 20%) in case Kenya transitions in to becoming an upper middle income country.
- The likely need to procure newer (and possibly more expensive) treatments for the treatment of multi-drug resistant TB.

5.4.5. On-going studies

This technical review identified several studies/documents whose scope relates to sustainable financing of the TB response in Kenya that are either on-going or planned to start in 2017. These studies/documents are:

1. A study on Kenya's sustainability and transition options and public finance management (PFM) processes at the national and county levels. The study which focuses on the HIV/AIDS, Malaria and TB programs is being implemented by Results for Development (R4D) with funding from the Global Fund. In light of this on-going study, and in order to avoid duplication of work, this report recommends that HIV/AIDS, Malaria and TB programs should not be considered as priority programs in Phase 2 of the proposed analytical activity on sustainable financing for priority programs in Kenya.
2. A draft sustainability framework for investment in TB that is being developed by the NTLP[90];
3. A TB investment case document that is being developed by the NTLP[90];

[90] Personal communication from the Section Head, Policy, Planning & Global Fund Coordinator at the NLTP

5.5. Reproductive Health and Family Planning

In summary

A) Key findings

- Kenya has achieved significant progress in relation to RH/FP including total fertility rate, contraceptive prevalence rate, unmet need for family planning and infant and under five mortality rates
- Maternal mortality ratio has declined from 506 per 100,000 live births in 2003 to 362 per 100,000 live births in 2014
- Unlike other vertical programmes, RH/FP is less dependent on donor funding; donors contribute only 18 percent of RH expenditure, however, households bear the largest burden of 42%. As a percentage of GDP, expenditure on reproductive health has remained constant at about 1%.
- The RH/FP priority program in Kenya is challenged by a significant funding gap of KES 58 billion.
- RH/FP programming in Kenya faces several challenges, key among them being: lack of clarity on roles and responsibilities of the national and county governments; lack of an single coordinating forum, bringing together committees and technical working groups working on RMNCAH
- Relative to other lower middle income countries, Kenya's performance, in relation to FP indicators, is in the median range. While the country performs better than several countries in terms of the prevalence of modern contraceptive methods among women age 15 – 49 years, it performs poorly relative to other countries with comparable income – an observation that points to the need to further optimize family planning efforts in Kenya.

B) Key recommendations

- The national and county governments should explore the best model to provide RH/FP health services. Such a model may include the retention within the national government of functions that benefit from economies of scale and which directly impact healthcare service delivery. Further, it is recommended that the national and county governments jointly develop a framework to guide the implementation of these functions within the healthcare sector that impact on the public good.

5.5.1. Reproductive health outcomes and determinants in Kenya

Kenya has achieved improvements in some but not all key RH and FP indicators: Kenya has achieved significant progress and results from the 2014 KDHS demonstrate this (**Table 22 and Figure 36**). The CPR has increased from 46% in 2008/09 to 58% in 2014. Further, the total fertility rate has decreased from 4.9 births per woman in 2003 to 4.6 in 2008/09 and further to 3.9 in 2014. While these data suggest that Kenya has so far attained its 2015 RH health related

targets it remains to be seen if the country will attain the set targets by 2020 and onwards to 2050.

Table 22. Temporal trends in selected reproductive health/ family planning indicators in Kenya (2003 – 2014). Adapted from KDHS 2014.

Indicator	2003	2009	2014
Total fertility rate (births per woman)	4.9	4.6	3.9
Contraceptive prevalence rate (CPR; modern methods)	31.5	39.4	53.2
Unmet need for family planning	27	26	18
Infant mortality rate (per 1000 live births	77	52	39
Under five mortality rate (per 1000 live births)	115	74	52
Maternal mortality rate (per 100,000 live births)	506 (398 – 614)	488 (343 – 696)	362 (254 – 471)

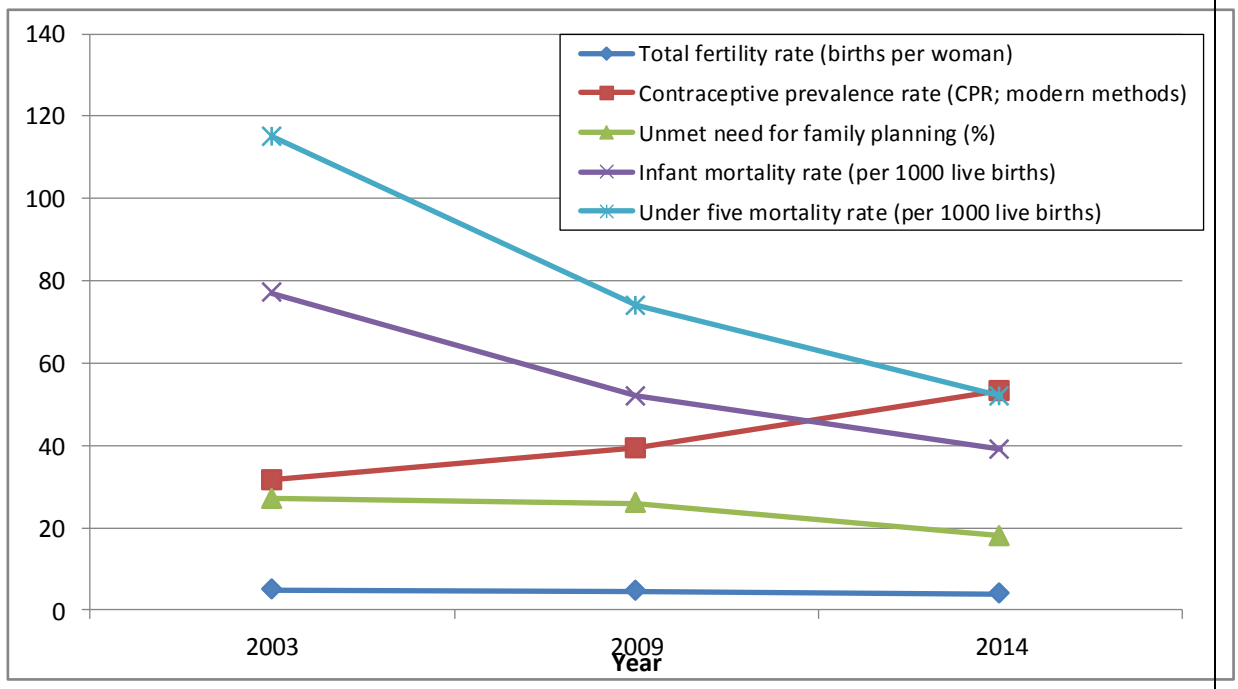


Figure 36. Temporal trends in selected reproductive health/ family planning indicators in Kenya (2003 – 2014)

Despite these positive family planning service delivery results, data from KDHS 2014 suggests that maternal mortality has not significantly improved over the last 7 – 10 years. In 2014, maternal mortality ratio (MMR) was estimated to be 362 maternal deaths per 100,000 live births for the seven-year period preceding the survey – an estimate that is not statistically different from the ratios reported in the 2003 and 2008/09 KDHS surveys. While data on MMR

from KDHS 2014 (362 maternal deaths per 100,000 live births) shows that Kenya has attained and surpassed the 2015 target of 400 maternal deaths per 100,000 live births set by the Sessional Paper No. 3 of 2012 on Population Policy for national Development, MMR in Kenya (362 per 100,000 live births) still compares poorly to the global average of 221 maternal deaths per 100,000 live births[91].

Relative to other lower middle income countries, Kenya's performance, in relation to FP indicators, is in the median range (Figure 37). While the country performs better than several lower middle income countries in terms of the prevalence of modern contraceptive methods among women age 15 – 49 years, it performs poorly relative to other countries with comparable income (**Figure 37**).

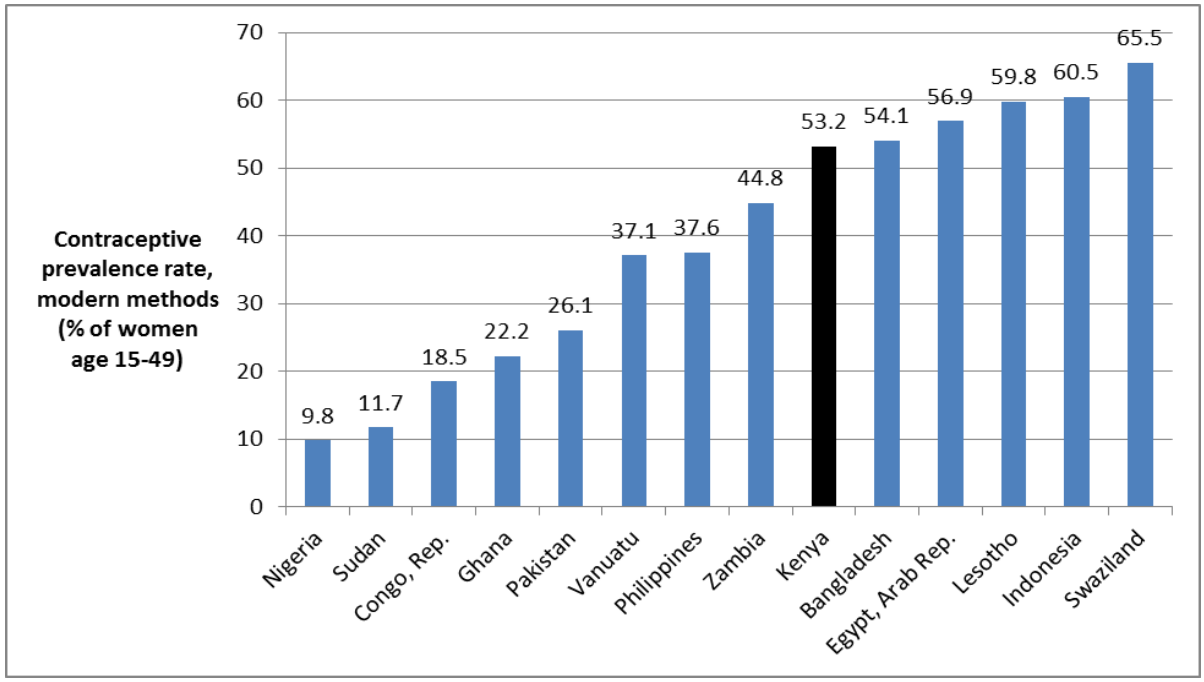


Figure 37. Contraceptive prevalence rate (modern methods) in Kenya compared to other lower middle income countries.
Data sourced from World Development Indicators
Authors' own illustration.

5.5.2. Governance of reproductive health programs in Kenya

There is lack of clarity on the roles of the national and county government in the governance of RH/FP in Kenya: At the national government level, the RH/FP program is coordinated by the Reproductive and Maternal Health Services Unit (RMHSU) within the Division of Family Health and the Department of Preventive and Promotive Health Services of MoH. Within the RMHSU, there are several programs that namely Family Planning, Maternal

[91] http://data.worldbank.org/indicator/SH.STA.MMRT

and Newborn Health, Adolescent and Youth Sexual Reproductive Health, Gender, and Monitoring and Evaluation that coordinate specific activities. For instance, the FP program is charged with the responsibility of ensuring contraceptive commodity security in Kenya. This involves forecasting and supply planning of contraceptive commodity needs, monitoring and coordinating procurement, and monitoring the storage and distribution of these FP commodities. The RMHSU coordinates RH and FP service delivery while the national Council for Population and Develop (NCPD) coordinates all matters that relate to population and development policies (including policies related to RH and FP).

Following the devolution, the roles of the national government vis-à-vis the county governments in relation to the RH/FP program has been unclear. While it is assumed that budgetary allocation for RH/FP commodities was transferred to county governments, it was not earmarked for the procurement of FP commodities and it is unclear as to what extent counties finance these commodities. For instance, while the national government through RMHSU coordinates the forecasting and supply planning of contraceptive commodity needs, the budget line item for the procurement of FP commodities was lost from the MoH budget following devolution. According to RMHSU, despite the FP budget line item being transferred to the county governments, the national government remains responsible for ensuring availability of these commodities at the county level.

> *"Our biggest challenge is to find a way around the challenges that came with devolution. We (RMHSU) had a budget line item for FP commodities but we lost that with devolution. We struggle to get it back … I know that in the case of vaccines, Treasury signed a Moue with CoG so the financial allocation for procurement of vaccines remains with the national government. In the case of FP, this never happened. The money went to the counties but the counties are not consistently procuring FP commodities" – Respondent 7*

5.5.3. Financing for reproductive health in Kenya

Financing for RH/FP in Kenya is largely from households, through out-of-pocket payments. According to the latest available NHA report ,the total expenditure on RH (THE_{RH}) in FY 2012/2013 was KES 30.1 billion, representing a 32% increase from the KES 22.8 billion spent in 2009/10. THE_{RH}, as a percentage of THE, dropped slightly, from 14% in 2009/10 to 13% in 2012/13. As a percentage of GDP, expenditure on reproductive health has remained constant at about 1%. The private (including households) and public sectors continue to be the major contributors of $THE_{RH,}$ accounting for 42% and 40% of THE_{RH} respectively, in 2012/13. Donors contributed 18% of THE_{RH} in 2012/13 – a 18% decrease relative to FY 2009/2010 when contributions from donors made up 22% of THE_{RH}.

The RH/FP programme faces a financing gap of USD 4,808,691 and USD 6,341,194 in 2017 and 2018 respectively. The 2016 – 2018 family planning commodities quantification and supply planning review report[92] estimates that the cost of procuring all medical products

[92] Family Planning Commodities Quantification and Supply Planning Review 2016-2018. MoH.

(excluding condoms) for Kenya's RH/FP response for the year of supply plan (excluding condoms) for the 2017 and 2018 is USD 14,017,424; and USD 11,677,747 respectively (**Table 23**). Excluding commodities whose procurement is already committed (valued at USD 9,208,733 and USD 5,336,552 in 2017 and 2018 respectively), the existing financing gap is estimated at USD 4,808,691 and USD 6,341,194 in 2017 and 2018 respectively. It is important to point out that these estimates only relate to commodities needed in the public sector.

2017

Table 23. Funding gap in the procurement of medical products (excluding condoms) for the Kenya's RH/FP response in Kenya for the years 2017 and 2018 in USD.

Product	2017			2018			Grand total
	Total financing required	Committed financing	Financing gap	Total financing required	Committed financing	Financing gap	
DMPA	4.149	4.149	-	3.877	3.877	-	8.028
POPs	0.438	0.438	-	0.560	0.087		0.999
COCs	2.417	2.417	-	1.717	0.730		4.135
EC Pills	0.175	0.175	-	0.072	-	0.072	0.248
LNG implants	3.980	1.624	2.356	2.621	0.266	2.356	6.601
ENG implants	2.693	0.305	2.388	2.748	0.360	2.388	5.441
IUCDs	0.103	0.038	0.065	0.065	-	0.065	0.168
Cycle beads	0.061	0.061	-	0.016	0.016	-	0.077
Total cost	14.017	9.209	4.809	11.678	5.337	6.341	25.695

5.5.4. Challenges to sustainable financing of reproductive health programs in Kenya

This study identified several challenges in Kenya's RH/FP. First, the lack of clarity on the roles and obligations of the national and county governments in relation to procurement of RH/FP commodities threatens to reverse the gains made against key RH/FP indicators. According to RMHSU, the loss of the family planning budget line item following devolution, and the failure of county governments to consistently procure RH/FP products is leading to stock outs in the county.

Second, this technical review found that the available data and forecasts of the financing requirements and gaps for Kenya's RH/FP response are disjointed. Third, there lacks an overall coordination mechanism that brings together working groups and stakeholders working on RMNCAH. While the necessity of such coordination platforms is clear and proposals to develop them put forward, these platforms are yet to be constituted. In the absence of such a unifying platform, the coordination of RMNCAH activities in the country is likely to be sub-optimal.

5.5.5. On-going studies

This technical review identified one on-going study whose scope relates to sustainable financing of the RH/FP response in Kenya. This activity is being led by RMHSU with funding from UNFPA and is envisaged to build on the 2012 – 2016 national Family Planning CIP and provide

forecasts of the financing requirements, available resources and financing gaps for the FYs 2017/2018 to 2022/23.

6. Summary of key findings

This technical review focused on the HIV, TB, Malaria, Immunization and RH programs in Kenya. The key findings are presented below.

1. While Kenya has recorded sustained economic growth over the past few years, a review of temporal trends in Kenya's GDP per capita and the government's expenditure on health reveals that increases in economic growth has not resulted in an increase in the proportion of government revenues allocated to health
2. The government's expenditure on health compares poorly to recommended thresholds and to other countries in the region
3. None of the priority programs has achieved financing, treatment and/or service delivery targets set out in national strategy documents or internationally endorsed declarations (**Table 24**).

Table 24. Performance of priority programs against pre-defined service delivery targets.

Priority program	Treatment/ Service delivery set targets*	Treatment/ service delivery scores achieved*
HIV/AIDS	50% of HIV response financed by domestic resources by FY 2018/2019	20.2% of HIV response financed by domestic resources as at FY 2013/2013
Immunization	90% DPT3 coverage nationally by 2020	81% DPT3 coverage in Kenya in 2016**
Malaria	100% of suspected cases of malaria receive prompt and effective diagnosis and treatment by 2018.	39% of all children <5 years with suspected cases of malaria received parasitological diagnosis by microscopy or RDT by 2015 25% of children <5 years with confirmed malaria diagnoses received the recommended 1st treatment.
Tuberculosis	Increased case notification of new cases to 85% of estimated prevalence	Latest data shows that TB prevalence is 558 per 100,000 population and thus 109% higher than previous 226 per 100,000 population estimates. This means that approximately 40% of TB cases are undetected.
Reproductive health/ Family Planning	Increase MMR from 473 maternal deaths per 100,000 live births in 2010 to 400 maternal deaths per	WHO estimated that in 2015, there were 510 maternal deaths per 100,000 live births.

	100,000 live births in 2015

*A selection of set targets and scores are presented here.

**Latest estimates show that this estimate is on a declining trend.

4. There are still significant financing gaps across all the five priority programs (**Table 25**).

Table 25. Estimated financing gaps in the HIV, Immunization, Malaria, TB and RH Programs in USD Millions

Program	Funding Gap	Estimate/forecast years
Immunization	525	2016 - 2020
HIV/AIDS	9,100	2015 - 2024
Malaria	328	2014 - 2019
Tuberculosis	215	2015 - 2018
Reproductive Health	580	2015 - 2020

*These are estimates provided in strategy documents developed by respective priority programs

5. In some of the priority programs (e.g. TB) existing data on financing gaps may be grossly under-estimated since they are based on under-stated burden of disease. The recently released TB prevalence survey of 2016 reveals that the actual burden of TB disease in Kenya is approximately twice as high as the estimates used to cost the national strategic plan.

6. Several challenges have impeded the preparation for the transition of priority programs to sustainable financing mechanisms by MOH:

   a) In some cases, while financing needs have been forecasted, they are hardly used inform policy processes or were used in MoH's budgetary cycles like MTEF or annual budgeting;

   b) Within some priority programs (e.g. HIV) there is no consensus among stakeholders on common metrics against which efficiency of these priority programs can be measured. Variations within unit costs of providing HIV services in health facilities in Kenya have been estimated to be as high as 40%.

   c) Within individual priority programs, there are several unknown variables that impact the transition to sustainable financing e.g. uncertainty in vaccine prices once GAVI assistance ends

   d) Lack of clarity on the obligations of the national and county governments with regards to procurement of medical products and revenue allocation towards the priority programs

e) Competition between priority programs (and their respective partners) for funding from the national treasury that has led to the investment case for increased financing for health fragmented into program-specific advocacy efforts that have so far not generated substantial increases in financing from the government.

7. There are several gaps in information and knowledge on aspects that are key to the planning for the transition of the priority programs to sustainable financing. These include:

   a) Detailed analysis of allocative and technical efficiency of priority programs. Hardly any systematic efficiency studies have been conducted to estimate allocative and technical efficiency gains that can be feasibly realized within priority programs. Summary data on efficiency gains have been presented in the reports reviewed here (e.g. the KASF 2014/2015 – 2018/2019) but detailed studies leading to these estimates were not accessible (or available) at the time of developing this report.

   b) Updated data on baseline funding estimates for the HIV response in Kenya. The baseline funding estimates presented in KASF 2014/2015 – 2018/2019 (which informed NACC's analysis of future financial requirements for the HIV response) were based on pre-rebasing GDP estimates and do not reflect the changes that came with the dramatic increase in GDP that occurred after the rebasing exercise.

   c) Policies or guidelines that inform PEPFAR's long term funding of the HIV response in Kenya. While PEPFAR is a major funder of the Kenyan HIV response, there are no clear policies on Kenya's long-term eligibility for funding or any guidelines on the amount of funding that PEPFAR can avail to Kenya. While allocations from new PEPFAR appropriations to Kenya specifically have decreased by 50% from 2010-2013, it is unclear whether this trend will continue.

   d) Data on the number and expertise of medical equipment technicians (METs) who maintain cold chain equipment

8. All the reviewed studies looking into sustainable financing of priority programs have investigated individual priority programs in isolation, with no attempts to explore how these can be integrated into the broader health system

9. All the proposed mechanisms for bridging financing gaps that may result out of the rebasing of Kenya's GDP that were reviewed in the preparation of this report proposed the establishment of dedicated funds (e.g. investment/ trust funds) that are ring-fenced to finance individual priority programs. The proposed mechanisms for the financing and re-capitalization of these dedicated funds have hinged on establishment of:

   a) A forward moving tax revenue based on taxation of pension contributions in the case of the immunization program;

   b) Multiple recapitalization mechanisms including debt-swap options; AIDS lottery; Corporate Social Investment (CSI); infrastructure HIV resources; health bonds; a

portion of interest from dormant funds; and organized informal sector contributions in the case of the HIV program

c) Introduction of local (county-level) taxes to fund the HIV response in counties with high HIV/AIDS disease burden

10. The proposed mechanisms for bridging financing gaps that may result out of the rebasing of Kenya's GDP that were reviewed in the preparation of this report have several fundamental flaws:

a) They propose the establishment of ring-fenced funds within individual priority programs and thus advance the priority nature of these programs instead of leading towards integration of priority programs into the health system.

b) They are unlikely to secure endorsement from the Treasury since establishment of dedicated funds fragments the revenue pool and makes Treasury less agile in re-allocation funds depending on pressing national needs that may arise in the future.

c) They will, most likely, lead to demands for similar funds by other priority programs, government departments and ministries, which is unlikely to be sustainable.

d) They are based, at least in part, on obtaining tax or contributions from the informal sector yet mechanisms to feasibly collect these taxes or contributions from the highly heterogeneous informal sector are not currently in place

e) They are based on taxation of pension contributions yet only a minority of Kenya (less than 17% of the employed population) are formally employed and thus are remitting pension contributions

7. Gaps in knowledge

On the basis of the insights gathered by this technical review, the following gaps in knowledge in relation to priority health programs: have been identified:

Immunization program

1. **Data on medical equipment technicians (METs).** To the knowledge of the authors to this report, there is no documentation (at a national level) on the number and expertise of METs in Kenya. There is documentation on the number of METs only in a few counties (e.g. Nakuru and Turkana) where specific partners have conducted training of METs. There is anecdotal evidence that there are varying numbers of METs across the counties. The lack of data on the number and expertise of METs will preclude accurate forecasting of the in-county capacity to maintain CCEs and other medical equipment.

2. **Data on challenges with procurement of vaccine syringes and needles.** While key informants to this study submitted that there are stock outs of BCG administration syringes in several counties due to procurement failures on the part of county governments, there is no data on how widespread a problem this is.

3. **Sub-optimal generation and use of data on immunization service delivery in decision-making.** According to the national immunization consultative forum: Immunization performance and vaccine cold chain summary report of February 2017, the timeliness and completeness of reporting on immunization-related indicators onto the DHIS 2 platform is low.

HIV/AIDS program

1. **Data on allocative and technical efficiency of the Kenyan HIV response.** While KASF (2014/2015 – 2018/2019) incorporates efficiency gain in its analysis of future financial requirements for the HIV response, information on how these efficiency gains were established is not presented. Further there is no consensus on a common metric against which efficiency of the HIV response can be measured.

2. **Updated data on baseline funding estimates for the HIV response in Kenya.** The baseline funding estimates presented in KASF 2014/2015 – 2018/2019 (which informed NACC's analysis of future financial requirements for the HIV response) were based on pre-rebasing GDP estimates and do not reflect the changes that came with the dramatic increase in GDP that occurred after the rebasing exercise.

3. **Policies or guidelines that inform PEPFAR's long term funding of the HIV response in Kenya.** While PEPFAR is a major funder of the Kenyan HIV response, there are no clear policies on Kenya's long term eligibility for funding or any guidelines on the amount of funding that PEPFAR can avail to Kenya. While allocations from new PEPFAR appropriations to Kenya specifically have decreased by 50% from 2010-2013, it is unclear whether this trend will continue.

4. **Consensus on indicators and unit costs against which to measure the cost of the Kenyan HIV response.** There lacks consensus and uniformity in the use of indicators and units to measure, evaluate and track key aspects of the Kenyan HIV response such as cost and efficiency. There lacks a set of universally agreed upon indicators and units of measurement that different stakeholders in the HIV space subscribe to.

Malaria program

1. **Sustainability analysis of the Kenya malaria response.** While costing and forecasting of the financial requirements (including gaps in financing) for the malaria program has been done, this study did not find evidence of investigations into sustainable financing mechanisms to bridge the forecasted financing gaps.

2. **Efficiency in malaria programming and service delivery.** At the time of developing this report there was no evidence of studies on allocative or technical efficiency of the malaria response in Kenya. In the absence of efficiency data, estimations of efficiency gains that can be leveraged to bridge financing gaps are precluded.

3. **Heterogeneity in malaria transmission and risk of drug resistance in costing analysis**. The costing and financing analyses (including estimates of financing gaps) that are presented in KMS 2014 – 2018 does not take into account heterogeneity in malaria transmission and risk of drug resistance especially with regard to the first-line treatment for malaria (AL).

TB program

1. **Sustainability analysis of the Kenya TB response**. While costing and forecasting of the financial requirements (including gaps in financing) for the TB program has been done, this study did not find evidence of investigations into sustainable financing mechanisms to bridge the forecasted financing gaps. Further, this study did not find documentation of sustainable financing mechanisms that the TB program can be transitioned to.

2. **Efficiency in TB service delivery.** There have been no systematic studies on the efficiency of the Kenyan TB response. At the time of developing this report there was no evidence of studies on allocative or technical efficiency of the TB response in Kenya. In the absence of efficiency data, estimations of efficiency gains that can be leveraged to bridge financing gaps are precluded.

3. **Reliable data on TB disease burden.** A recent survey has showed that the true burden o of TB disease in Kenya is approximately twice as high as the estimates used in costing the Kenya national Strategic Plan on Tuberculosis, Leprosy and Lung Diseases (2015 – 2018). There are gaps in knowledge in terms of how much the national TB strategy actually costs considering the latest TB disease burden data.

RH/FP program

1. **Data on allocative and technical efficiency of the Kenyan RH/FP response.** This technical review of priority programs did not find any data on efficiency of the RH and FP program.

2. **Data on the long-term financing requirements.** Data on financing requirements, available resources and financing gaps related to Kenya's RH/FP response is only available until FY 2018/2019.

3. **Sustainable financing options for the Kenyan RH/FP response**. While there are financing gaps in Kenya's RH/FP response, this technical review did not find any studies/analyses that have looked into sustainable financing mechanisms that can be

adopted to bridge these gaps or integrate RH /FP into the broader health system in Kenya.

4. **Development of mechanisms that clarify and better coordinate the activities of RMHSU and county governments especially with regards to the financing, budgeting and procurement of RH/FP commodities.** This can be achieved by leveraging on the provisions of the Intergovernmental Relations Act and strengthening of working relationships between MoH and the CoG.

8. Recommendations

This report, on the basis of insights gathered in the technical review of priority health programs in Kenya, makes the following recommendations:

Governance

National and county governments to review existing governance structures for provision of health services that have a public good: Experiences at the national and county government levels over the last five years, especially with regards to financing and timely procurement of essential medical products, suggest that there is need to optimize the governance of priority health programs – especially with regards to services that have a public good. While devolution has its merits, including greater accountability at lower levels government that is closer to the citizens, insights gathered in this technical review suggests that the risk of losing on economies of scale outweighs the gain in accountability. What was observed is that commodities that were left to individual county governments to procure (e.g. syringes and needles) were not procured, suggesting that accountability at county government level was suboptimal. This resulted, for instance, in vaccines (procured through the national government) being available at health facilities yet needles and syringes were not available. The net effect of this is the observed decline in vaccine coverage rates. On this basis there is merit in exploring mechanisms to retain the management of products/ services that have a public good (e.g. vaccines) at the national government level.

This review recommends that the national and county governments discuss and explore the best model to provide health services that have a public good. This model may include the retention, within the national government, of functions within the healthcare sector that directly impact the delivery of health services that have a public good. These functions may include the financing and procurement of vaccines and because immunization is a public good and there is value in pooling the procurement of vaccines across all counties so as to leverage on economies of scale and negotiate for preferential prices on the vaccines. Further, it is recommended that the national and county governments jointly develop a framework to guide the implementation of these functions within the healthcare sector that impact on the public good.

Review the merits and demerits of vertical versus integrated structure of priority health programs: There is need for national and county governments to review the merits and demerits

of delivering priority healthcare services using the current vertical structure versus an integrated delivery structure. This is particularly important considering that, to a large extent, the priority health programs offer services that are for the public good i.e. services (e.g. immunization and control of the spread of TB) whose impact goes beyond the individual programs to influence the wider public.

Strengthen coordination of functions and roles between the national and county governments: Over the past five years, instances of sub-optimal coordination (or lack of clarity on roles) between the national and county governments has impacted negatively on service delivery. It is recommended that the national and county governments work together to build on the provisions of the Intergovernmental Relations Act of 2012 and develop practical guideline documents that will inform and coordinate the work of the two levels of governments around practical issues such as the procurement of immunization needles and syringes and budgetary provision for RH/FP commodities.

Health Finance

Review of PFM Act, timing and predictability of tax revenue flows at national and county government levels: Experiences at the national and county government levels over the past five years suggest that there are major bottlenecks in the flow of funds between and within the two levels of governments. These bottlenecks have resulted in instances of stock outs of key medical products due to the failure to allocate and release funds for the procurement of these products in a timely manner. This technical review recommends the review of PFM structures in Kenya to identify bottlenecks and design interventions to address them. These interventions may include: a review of the PFM Act to identify legal bottlenecks; and the training of national and county government officials to strengthen their capacity to improve efficiencies in financial planning and budgetary processes so as to ensure timely flow of funds between and within the two levels of government.

Improvements to the PFM structures will ideally reduce the level of unpredictability of financial flows at the national and county governments. This should, in turn, result in better planning of healthcare programs at the two levels of governments and avert stock outs of medical products such as vaccines as was experienced Between October and December 2016 due to delays in release of funds from the national to county levels of government.

The review of the PFM structures should also extend to the allocation and purchasing functions. There is merit in reviewing the potential to improve the allocation of public resources by the National Treasury by borrowing lessons from results-based financing (RBF) schemes that have enhanced accountability and predictability of financing in the health sector[93].

Development of sustainable financing mechanisms to bridge gaps created by reducing international financing: This technical review recommends that national and county

[93] https://www.rbfhealth.org/sites/rbf/files/Musgrove_2011.pdf

governments reviews the merits and demerits of proposals that have been put forward to establish ring-fenced funds to finance individual priority programs. In reviewing this proposal, it is recommended that the proposals be contrasted against mechanisms that will integrate the financing of priority health programs into the wider heath system. An example of a mechanisms that would implement this integration is the incorporation of the priority programs into the NHIF and strengthening the revenue base and management efficiency of the national fund to accommodate the cost of offering services that are currently being provided within the priority programs.

Advocate for restructuring of counterpart financing within the Global Fund: The current position put forward by Global Fund demands that Kenya meets the 20% minimum co-financing threshold. The financing committed towards this co-financing is ring-fenced towards individual priority program and can therefore only be used for HIV, TB or Malaria. Moving forward it is recommended that the national government, MoH and The national Treasury advocates for a re-structuring of counterpart financing mechanisms within the Global Fund such that the co-financing commitment be allowed to fund a more integrated healthcare funding mechanism e.g. NHIF rather than HIV, Malaria and TB only that will not only be sustainable but will also impact the overall healthcare system.

Human resources for health (HRH)

Conduct a mapping of METS, identify skills gaps and implement systematic capacity building to improve capacity for maintain CCE. This technical review demonstrates that, while there are deficiencies in HRH across the health sector in general, there are specific gaps within some of the priority health programs. Within the immunization program, there is hardly any documentation of the number and expertise of medical equipment technicians (METs) and it is unclear whether there are adequate numbers of METs in the country. Further, the credentials and expertise the METs who are currently employed by county governments is unclear. This report recommends that the national and county governments need to systematically map out the human resource capacity (in terms of METs) to identify qualitative and quantitative skill gaps that may exist and implement systematic capacity building to increase Kenya's capacity to service and maintain CCe. The mapping exercise should also develop a centralized data repository of the METs that should be linked to the wider HRH structure and reporting mechanisms within MoH.

Service delivery, equitable coverage, outcomes and determinants

Increase demand side interventions in low coverage counties to promote equity in access to priority services. This technical review established that none of the priority health programs has fully achieved its respective treatment and/or service delivery targets. Importantly, this review established that there are wide inequalities in service delivery and coverage levels especially with regards to coverage of vaccines and immunization services across the counties. While this technical review did not find a comprehensive analysis of the drivers of low vaccine coverage in some counties, it is likely that the inadequate or untimely financing and procurement of vaccines as well as suboptimal demand creation contribute the low coverage. It is

recommended that individual priority programs (e.g. the UVIS) identifies counties that have low vaccine coverage and implement demand-creation activities. This may include increased advocacy on the value of immunization as well as coordination with community health divisions at the county levels to enhance follow up of children who miss out on immunization visits. This recommendation will also apply to other priority health programs such as HIV/AIDS where there are marked disparities in the burden of HIV/AIDS across the counties.

Essential medical products, vaccines and technologies

Explore opportunities for local manufacturing options for medication, diagnostic test kits and vaccines through public-private partnerships. This technical review demonstrates that, while there are deficiencies in essential medical products and technologies across the health sector in general, there are specific gaps within some of the priority health programs. Within the immunization program, there are significant deficiencies in cold chain equipment (CCE) infrastructure. Considering that a comprehensive cold chain expansion and replacement plan**Error! Bookmark not defined.** has already been developed by UVIS in collaboration with other stakeholders, this report recommends that the national and county governments uphold the commitment to fund the implementation of the plan. In order to reduce Kenya's dependence on imported medical products and technologies, it is recommended that the national government explores local manufacturing options for medication, diagnostic test kits and vaccines. This will, in addition to reduce the country's dependence on imported products, cushion the Treasury against loss of foreign exchange and price fluctuations in the international market. The Treasury has in the past failed to remit payment to GAVI on time due to reluctance to deplete its forex reserves especially when the Kenya Shilling has been weak compared to the US dollar. The pre-qualification by WHO of two local manufacturers (Lab & Allied and Universal Corporation Limited) to produce co-packed Oral Rehydration Salts and Zinc (ORS/Zinc) and sell to UNICEF demonstrates that local manufacturing of quality medications is possible in Kenya. This recommendation is contingent on positive results of studies looking into Kenya's competitive advantage in the pharmaceutical manufacturing sector.

9. Potential areas of future work

On the basis of the insights gathered by this technical review, the following areas of future work have been identified:

Assessment of public finance management (PFM) structures in Kenya. The direct policy recommendation that will result from this assessment is the identification of bottlenecks in PFM in Kenya and design of interventions (some of which will be policy changes) to address them. These interventions may include but may not be limited to:

- Review of the PFM Act of 2012 to explore possibilities to improve the allocation of public resources by the national Treasury by borrowing lessons from results-based financing (RBF) schemes that have enhanced accountability and predictability of financing in the health sector.

- Strengthening the capacity of national and county governments to implement interventions that can address the bottlenecks that will be identified in the review of the PFM Act.
- Training of national and county government officials to strengthen their capacity to improve efficiencies in financial planning and budgetary processes so as to ensure timely flow of funds between and within the two levels of government.

Technical assistance to the national and county governments to:

- Leverage on the experiences of the last five years to discuss and explore possibilities of retaining functions within the healthcare sector that impact on the public good within the national government. These functions may include the financing and procurement of vaccines. Insights from this technical review indicate that, with regards to medical products that impact on public good, the benefits of centralized pooled procurement outweighs the gains in accountability that may result due to devolution. While this is observed, the decision to recentralize the functions related to products that impact on public good will be dependent on consultations between the national and county governments.
- Develop a framework to guide the implementation of functions within the healthcare sector that impact on the public good as described above.
- Enhance governance and accountability related to procurement of medical products at the county government level (for products whose procurement will remain decentralized) as well as at national government level (for products whose procurement may be recentralized).

Systematic mapping out of Kenya's human resource capacity (in terms of METs), to identify qualitative and quantitative skill gaps that may exist and implement systematic capacity building to increase Kenya's capacity to service and maintain Cold Chain Equipment (CCE).

- The mapping exercise should result in the development of a centralized database of the number and expertise of METs in Kenya. This database should be updated regularly and used by to inform the planning of ongoing efforts of improving the CCE infrastructure in Kenya by replacing old gas driven refrigerators with modern solar driven and ice layered ones. This will be important since the success of the CCE infrastructure improvement efforts is contingent on the availability of adequate numbers of METs who are trained to service and maintain modern CCEs.

An analysis of the financing of the wider health sector (beyond the priority health programmes) to identify services and programs (if any) whose funding may yield greater value if they are reallocated towards the priority health programmes. This may identify opportunities to raise finances to bridge the funding gaps that will result from reductions in international financing.

Review and developing standardized methodologies/guidelines for conducting studies related to the financing of health programmes. These methodologies will include protocols for conducting costing studies, efficiency assessments etc. The adoption of standardized methodologies by the multiple stakeholders working in the healthcare space will facilitate the

comparison of results across studies as well as provide a consistent approach to the generation of evidence to inform policy making.

10. Conclusion

Kenya's economic growth trend over the past few years and the recent rebasing of its national accounts in 2014 resulted in an upward revision of the country's GDP per capita and the classification of the county as a lower middle income economy. Consequently, Kenya has surpassed certain income eligibility thresholds for international financing and is therefore subject to reduced international financing for its priority programs.

Kenya is to a large extent unprepared to transition its priority programs away from being predominantly donor-funded to being sustainably financed by domestic resources or, where necessary, integrated into the wider health system. While there has been some work towards the sustainable financing for the HIV and Immunization programs, not much is evident with regards to Malaria, TB and RH. Even in the case of the HIV and Immunization programs where some proposals have been put forward to move these two priority programs towards being sustainably financed, fundamental flaws that will likely preclude their successful implementation characterize the proposals. Further, whereas there has been some analytical work that has generated estimates of the financing gaps in the five priority programs (especially within the HIV and Immunization programs) that were reviewed here, the estimates have some major shortcomings and will need to be re-worked.

Successfully bridging the financing gaps that exist within all the five priority programs will require improvements in allocative and technical efficiency as well as an increase in domestic financing towards these programs. The former strategy is currently disadvantaged by the absence of studies on the efficiency of the priority programs – except for one study on the efficiency of HIV/AIDS spending in Kenya.

In this regard, there is need for systematic analytical work and an exploration of sustainable financing mechanisms across all the priority programs. The analytical work will need to start from the ground up in the case of the Malaria, TB and RH programs. In the case of the HIV and Immunization programs, the analytical work can build on the work that has been done so far.

This review recommends that an exploration of sustainable financing mechanism should avoid siloed mechanisms that have been proposed so far (e.g. the establishment of trust/investment funds that are ring-fenced for individual priority programs). Future work should focus on accurate estimation of the financing gap across all the Priority programs and explore the bridging of these gaps through integration of these priority programs into the broader health system. Specifically, there is need to explore the incorporation of the priority programs into the NHIF, strengthening its revenue base and management efficiency to accommodate these priority programs.

Annex

Annex 1. List of reviewed literature

1. Kenya Demographic and Health Survey. 2014. KNBS
2. Kenya's roadmap towards universal health coverage by 2030. Ministry of Health. Kenya. 2015
3. Kenya Health System Assessment. 2010. Bethesda, MD: Health Systems 20/20 project, Abt Associates Inc.
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19. Chuma and Okungu. 2011. Viewing the Kenyan health system through an equity lens: implications for universal coverage
20. county Health Accounts. 2016. MoH
21. national and county Health Budget Analysis Report
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23. national immunization consultative forum. Immunization performance and vaccine cold chain summary report. MoH. 2017
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25. Comprehensive multi-year plan for immunization. Unit of vaccines and immunization services (2015-2019).
26. Kenya - Joint Appraisal Report. GAVI. 2015.
27. GAVI Co-financing summary – Kenya. 2017
28. Kenya EVM Assessment – Findings and Recommendations of the Assessment Team. MoH. 2013
29. national Cold Chain Inventory. national Vaccines an Immunization Program (NVIP). 2016
30. Kenya Cold Chain Expansion and Replacement Plan. national Vaccines an Immunization Program (NVIP). 2016.
31. Oxford Policy Management. Sustainable Financing for AIDS in Kenya. 2011.
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33. Sustainable financing of HIV and AIDS response in Kenya: Kenya's Lower Middle Income (LMIC) Transition and the Need to Protect Investments in HIV and AIDS
34. UNAIDS Global AIDS Update. 2016.
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42. Revised Kenya Malaria Strategy 2014 – 2018 (KMS 2014 – 2015)
43. Kenya Malaria Monitoring and Evaluation Plan 2009 – 2018
44. Kenya Malaria Operational Plan FY 2016. PMI
45. Global Tuberculosis Report. WHO. 2016
46. Global Tuberculosis Report. WHO. 2015
47. Kenya Tuberculosis Prevalence Survey report 2016
48. Fourth national Anti-Tuberculosis Drug Resistance Survey. NTLP –Program. 2016
49. The Kenya national Strategic Plan on Tuberculosis, Leprosy and Lung Diseases 2015 – 2018

50. national quantification for tuberculosis and leprosy commodities (2016/2017). NTLP 2016.
51. Sessional Paper No. 3. Population Policy for national Development. 2012
52. Family Planning Commodities Quantification and Supply Planning Review 2016-2018. MoH. 2017

Annex 2. List of participating organizations

- The national AIDS Control Council (NACC);
- The national AIDS and STI Control Program (NASCOP);
- The national Malaria Control Program (NMCP);
- The Division of Reproductive Health (DRH);
- national Tuberculosis, Leprosy & Lung Disease Program (NTLP);
- The Unit of Vaccines and Immunisation Services (UVIS);
- The World Health Organization – Kenya Country Office (especially the Expanded Program on Immunization department);
- Kenya Medical Supplies Agency (KEMSA);
- USAID – Kenya Country Office;
- UNICEF – Kenya Country Office.

Annex 3. Additional figures and Tables

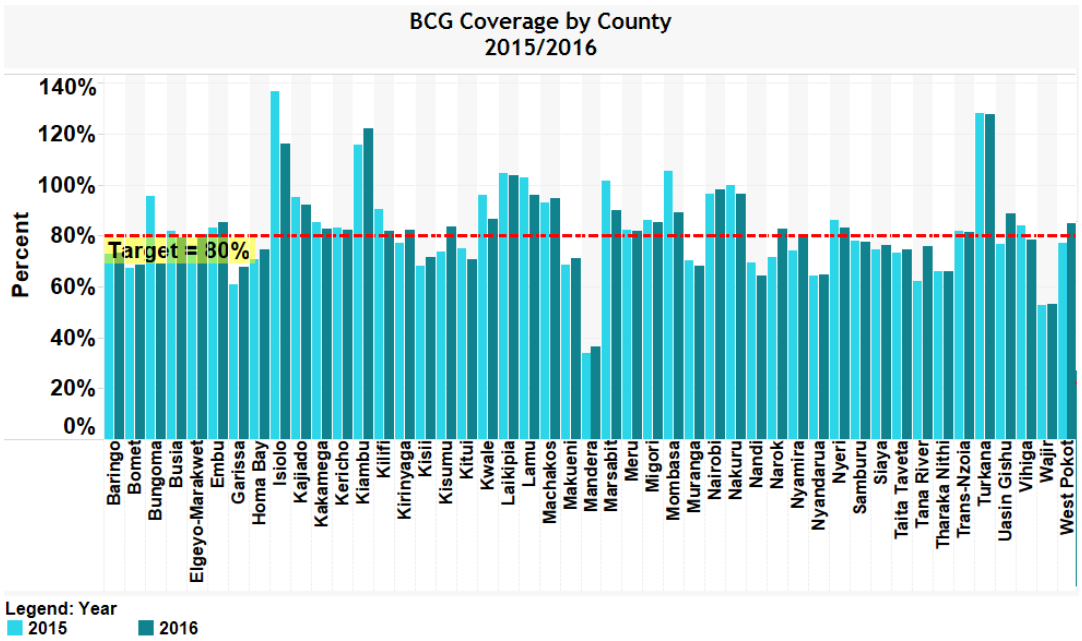

Figure A1. BCG coverage by county. Adapted from the Immunization performance and vaccine cold chain summary report of February 2017

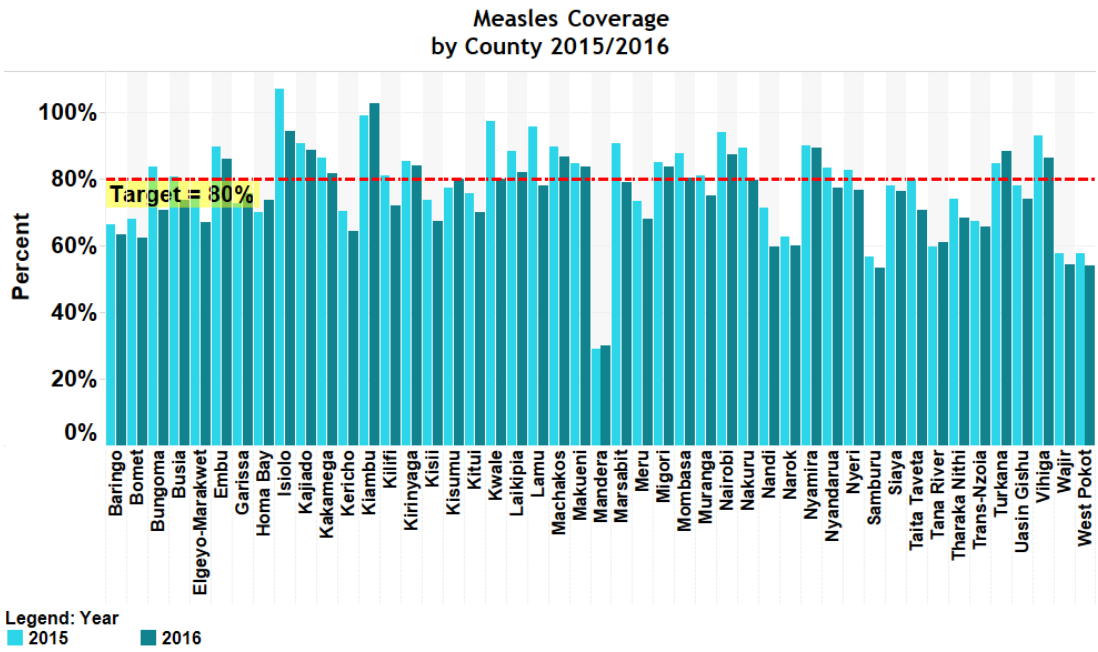

Figure A2. Measles coverage by county. Adapted from the Immunization performance and vaccine cold chain summary report of February 2017

Table A1. Vaccine prices negotiated by GAVI on behalf of GAVI-eligible countries and used in the CMYP (2015 – 2019)[33]

Vaccine	Vaccine price per dose (USD)
DPT-Hep B- Hib	2
Yellow fever	1.28
Pneumococcal conjugate vaccine	3.57
Rota virus	2.73

Table A2. Total expenditure on HIV by source of funding and spending category in 2015/16 (millions of KES)

	Public funds (national and county)	For-profit institutions and corporations	Households' funds	Not-for-profit institutions	government of United Kingdom	government of United States	GFATM	UN Agencies	Total
Prevention	2,484	-	-	736	36	8,060	539	53	11,907
Care and treatment	12,269	1,454	2,669	3,679	-	20,033	6,329	16	46,449
Orphans and vulnerable children (OVC)	-	-	-	-	-	2,978	-	-	2,978
Programme management and administration	1,083	-	-	-	-	6,888	701	176	8,847
Human resources	-	-	-	-	12	2,441	423	15	2,891
HIV and AIDS-related research (excluding operations research)	-	-	-	-	-	-	-	22	22
Total	15,835	1,454	2,669	4,415	48	40,400	7,991	281	73,094

Table A3. HIV/AIDS Expenditure by service providers in in KES million.

	2012/13	2013/14	2014/15	2015/16	Total
Public sector providers	31,362	33,524	45,080	49,587	159,553
Hospitals (governmental)	30,560	32,173	43,394	47,694	153,820
Blood banks (governmental)	238	252	198	224	912
government entities (NASOP, NACC, Ministries)	564	1,098	1,488	1,670	4,821
Private sector providers	13,951	12,216	14,790	16,871	57,828
NGO/ CSO/CBO	7,121	5,585	5,208	6,612	24,525
Hospitals (Non-profit faith- based)	5,663	5,678	8,608	9,021	28,970
Hospitals (For profit)	1,167	954	975	1,237	4,333
Multilateral agencies	198	531	192	115	1,036
International NGOs	16,168	13,096	13,261	6,521	49,045
Total	61,679	59,367	73,324	73,094	267,463

Table A4. Summary of literature on efficiency, costing and sustainable financing of HIV/AIDS in Kenya

Title/ Authors/ Year	Objective	Methodology	Key findings
Sustainable financing for AIDS in Kenya: A forward looking assessment of the AIDS financing gap **Tomas Lievens** **Alexandra Murray-Zmijewski** **Urbanus Kioko** **Ed Humphrey** **2011**	Explore how the government of Kenya can approach long term financing for HIV/AIDS.	Review of literature on existing financing for HIV/AIDS Projection of future resource requirements based on key informant interviews (KIIs) with stakeholders (e.g. NACC and national Treasury) Projection of secured and anticipated resources for HIV/AIDS Estimation of efficiencies and cost savings that can be made in HIV/AIDS service delivery	Total resource needs for HIV/AIDS estimated to grow from KES 43.3 billion in 2009/10 KES 92.9 billion by 2020/21 Financing gap for HIV/AIDS is estimated to grow from KES 2.7 billion in 2009/10 to KEs 22.1 billion in 2019/20 A promising approach to bridging the financial gap in HIV/AIDS response in Kenya is reform of the NHIF to provide full coverage to the population and to include selected AIDS health services in the benefit package.
Sustainable Financing of HIV and AIDS in Kenya: Kenya's Lower Middle Income (LMIC) Transition and the Need to Protect Investments in HIV and AIDS **WHO, UNAIDS, NACC, Kenya Vision 2030**	Investigate the impact of the rebasing of Kenya's economy in 2014 on the country's HIV and AIDS financing response.	Desk review of literature and KIIs. Assessment of the: immediate changes to major donor financing for HIV/AIDS as a result of rebasing; vulnerabilities in the NACC's current domestic financing projections as outlined in the KASF; experience of a peer country (Ghana) that has rebased recently to become an LMIC and begun to develop ways to ensure financial ownership and sustainability for its HIV response.	PEPFAR, Kenya's largest donor for HIV and AIDS, has no stated policy linking funding with country income status. Over the past 4 to 5 years, PEPFAR's overall budget has flat-lined, which has restricted the extent by which country allocations could increase. Allocations from new PEPFAR appropriations to Kenya specifically have decreased by 50% from 2010-2013. The Global Fund considers a country's income status in its funding allocations. Since allocations for 2014/16 are fixed, there will be no impact on the available pool of funds for Kenya until 2017 when the Global Fund's next replenishment period begins (2017-2019).

2016			In 2017/19, the main change will be that 50% of each HIV grant to Kenya must focus on specific interventions and populations. Beyond 2016, four factors unrelated to Kenya's income may affect its allocation. These are: amount of money Global Fund raises in its next replenishment period; possibility of changes by Global Fund on the overall allocation percentages to each of the three disease areas, which could change the amount of HIV and AIDS funding available for all Global Fund-eligible countries; possibility of changes to Global Fund's allocation formula; and changes in Kenya's relative GNI per capita ranking against all Global Fund-eligible countries. To reduce its vulnerability to changes in international financing and support the broader goals of UHC and Vision 2030, NACC should: obtain better information on the HIV and AIDS financing gap; increase county capacity for prioritisation, planning and monitoring; mobilise more and/or increase the share of domestic resources; and integrate HIV and AIDS care and treatment services into the national Health Insurance package of services as Ghana has done.
Efficiency of HIV/AIDS Spending in Kenya. **Awiti and Mwambu.** **2016**	Estimate the efficiency of HIV/AIDS spending in Kenya	Data Envelopment Analysis (DEA) and Stochastic Frontier Analysis (SFA) techniques to estimate the efficiency of HIV/AIDS spending in Kenya.	HIV/AIDS spending in Kenya scores an average efficiency score of 0.408 and 0.729 according to the DEA and SFA techniques respectively. HIV/AIDS spending in Kenya has low efficiency and needs to be improved. Major determinants of efficiency in HIV/AIDS spending are population share, consumption share and adult male circumcision coverage all of which increase efficiency. HIV prevalence correlates negatively with HIV spending efficiency.

Financial Sustainability of HIV/AIDS and other Universal Health Coverage interventions and in four countries in Sub-Saharan Africa: A Case Study from Kenya **The World Bank Group** **2015**	Assess the financial viability of both expanding the country's HIV response and moving toward UHC in a scenario of stagnant or reduced donor financing.	Desk review of the published and unpublished literature on the costing, financing, and effectiveness of HIV and UHC strategies in Kenya. Formulation and costing of a UHC health benefits package (HBP), using the OneHealth Tool (OHT) Developent of a health financing model to project through the year 2030 the costs of HIV/AIDS services and of UHC under different scenarios.	Ambitious scaling up of coverage of HIV and other priority services under UHC is financially not viable if government maintains its current allocation of the general budget to health, donors maintain in real dollar terms their current support to the health sector, and the existing levels of technical efficiency in the production of health services remain unchanged.