


Kenya Cold Chain Optimisation Platform Application


September 2016

This application is prepared for countries applying for the Gavi CCE optimisation platform ('the Platform') support in September 2016.

In filling this application form, countries are expected to consult the following documents and resources:


	Application Guidelines for countries wishing to request HSS support is available here: www.gavi.org/support/apply
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	Application Instructions for countries wishing to request CCE optimisation platform support is available here: www.gavi.org/support/apply
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	Technology guide for equipment selection for counties wishing to request CCE optimisation platform support is available here: http://www.gavi.org/support/hss/cold-chain-equipment-optimisation-platform/
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	Extensive technical resources relating to vaccine cold chain equipment management are available on TechNet-21: http://www.technet-21.org/en/resources/cold-chain-equipment-management
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Additionally:

	This signals important information that is provided within this application form
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1. APPLICANT INFORMATION

Country	KENYA		
Date	8/9/2016		
Contact name	Dr EPHANTUS MAREE		
Email address	Emareent@yahoo.com		
Phone number	+254 722 858 010		
Total funding requested from CCE optimisation platform (US \$)	Total: 13,586,956.44 Co-Payment: US \$ 6,793,478.22		
Does your country have an approved Gavi HSS support on-going?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
	Indicate the anticipated final year of the HSS: 2019		
Proposed CCE optimisation platform support start date:	JUNE 2017		
Proposed CCE optimisation platform support end date:	DECEMBER 2021		
Signatures Include signed (and official) CCE optimisation platform application endorsement by: a) <i>Minister of Health and Minister of Finance (or delegated authorities)</i> b) <i>Members of the HSCC/ICC or equivalent committee and signed minutes of meetings where the application was endorsed</i> <i>In case of HSS and CCE optimisation platform requests, minutes must reflect that both were discussed and endorsed.</i>	We the undersigned, affirm the objectives and activities of the Gavi CCE optimisation platform proposal are fully aligned with the national health strategic plan (or equivalent) and that the funds for implementing all activities, including domestic funds and any needed joint investment, will be included in the annual budget of the Ministry of Health:		
	Minister of Health (or delegated authority) Name:	Minister of Health (or delegated authority) Name:	
	Signature:	Signature:	
	Date:	Date:	

2. NATIONAL STRATEGIES AND PLANS RELEVANT TO SUPPLY CHAIN AND REQUESTED SUPPORT

How do the following national strategies, country plans and documents inform plans to strengthen the country's supply chain, and how do they inform the request for CCE optimisation platform support. These documents are **mandatory**, must be **attached** to your application, and they must be **final** and **dated**.

No	Strategy / Plan / Document <i>*All documents are mandatory. Only complete applications will be assessed.</i>	Attached Yes/No	Final version (dated)	Duration	Comments
1	Signature sheet for the Minister of Health and Minister of Finance, or their delegates	Yes			
2	Signature sheet for HSCC/ICC or equivalent committee endorsement and minutes of meetings	Yes			
3	National Health Sector Development Plan	Yes		July 2014 to June 2018	
4	cMYP	Yes		July 2015 to June 2019	
5	EVM Assessment	Yes	December 2013	28 October to 30 November 2013	
6	EVM Improvement Plan	Yes	January 2014	July 2014 to June 2019	
7	EVM Annual Workplan AND Progress Report on EVM Improvement Plan¹	Yes		July 2016 to June 2018	
8	CCE Inventory Report² AND Facilities Segmentation Plan	Yes	August 2016		
9	Cold Chain Rehabilitation and Expansion Plan, AND Equipment Selection and Strategic Deployment Plan	Yes	August 2016	August 2016 to June 2021	
10	Maintenance Plan with financing	Yes	August 2016	2016- 2020	
11	Proof of status for CCE tariff exemptions waiver	Yes	September 2014		
12	OTHER RELEVANT DOCUMENTS		M&E Plan; July 2016 TCO; July 2016 CCEOP Budget; July 2016	M&E Plan; 2017 to 2021 TCO; 2017 to 2021 CCEOP Budget; 2017 to 2021	
13. How do the above strategies, plans and documents inform the CCE optimisation platform support request ('initial support' and 'scale-up support')? Countries are encouraged to reference relevant sections of the above documents as much as possible. <i>Provide approximately 1 page</i>					
The Kenya immunization supply chain is governed by CMYP which receives guidance from the overall health sector plan. The					

¹ The EVM IP and annual work plan progress report must have been updated within three (3) months of applying for Platform support.

² The CCE Inventory must have been updated within no more than one (1) year of applying for Platform support.

overall goal of the Kenya Health Policy is “attaining the highest possible standard of health in a manner responsive to the needs of the population”. To realize this goal, the policy aims to deliver “equitable, affordable and quality health and related services at the highest attainable standards to all Kenyans”. It envisions policy principles based on an equitable health delivery system; efficient application of health technologies; a multi-sectoral approach to realizing health goals by applying a ‘Health in All Sectors’ approach, focusing on health-related sectors including Agriculture, Education, Roads, Housing, and Environmental factors in realizing the objectives of the policy; social accountability; and a people-centred and participatory approach to healthcare services delivery. The Kenya CMYP, which draws policy guidance from the health sector plan, details the challenges and opportunities faced by the vaccine supply chain system, and cold chain is a pivotal challenge faced by the country. This has a long-term effect on the coverage as well as the quality of vaccines that children receive in the country.

The vaccine cold chain is not only an integral part, but the very backbone of an immunization programme supply chain. It constitutes the immunization supply chain which entails storing and transporting vaccines at recommended temperatures from the point of manufacture to the point of use while meeting the three key objectives of the supply chain; availability, efficiency and quality. An EVM assessment conducted in 2013 revealed major gaps in the cold chain system especially at the facility and sub-county levels, which scored 69% and 66% respectively. There have since been significant efforts to improve the cold chain capacity at the facility and sub-county level.

The country last conducted a comprehensive cold chain inventory in 2011 and there have been several changes and improvements in the cold chain between then and the current inventory of 2016. The 2016 cold chain inventory was carried out using a simplified Excel data collection tool.

CCI Year	Number of HF	Number of Equip	Solar	Number of HF without EPI fridge	Electricity Coverage	Non-Functional (%)	PQS-PIS compliance (%)	Non-EPI
2011	5305	4946	236	13%	57%	17%	85%	15%
2016	6911	7042	456	18%	70%	8%	79%	21%

There have been several improvements between the two CC inventories with an increase in the number of facilities offering immunization service, increase in number of cold chain equipment, a reduction in the number of equipment that are non-functional (as a percentage of all equipment) and an overall improvement of electricity coverage in the health facilities. However, the number of non-EPI equipment has increased during this time and these are mainly to be found in the private sector.

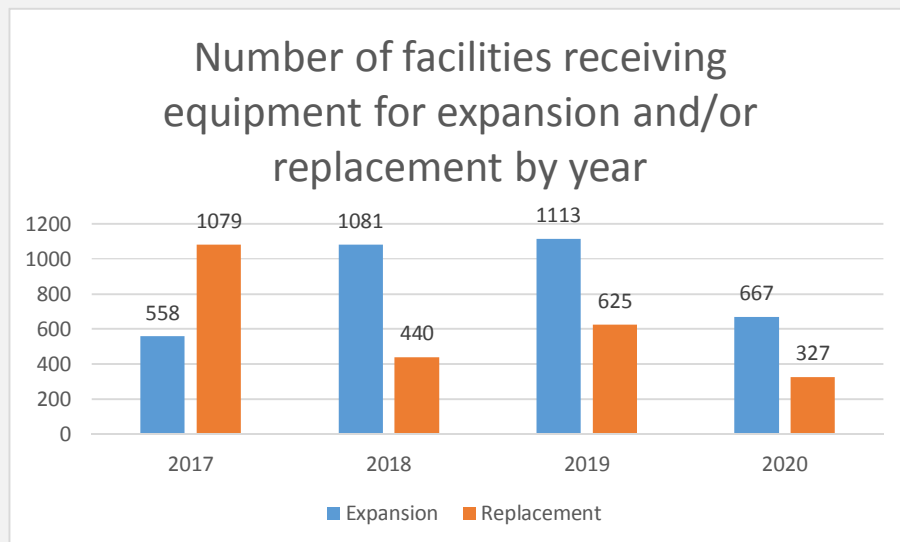
However, major gaps still exist both in terms of capacity and quality, as evidenced in the CCI updated in June 2016. 18% of HFs reported in the CCI do not have refrigerator. This is not in line with the National Health Policy that requires all facilities to be functionally equipped to provide the Kenya Essential Package for Health (KEPH). In addition, a significant number of HFs still don’t provide immunization services due to a number of reasons, with lack of cold chain equipment a major reason. The CCI also shows about 2,200 CCE are more than 10 years old while about 3,500 are gas-electric refrigerators, which is currently an outdated technology.

Information in this application came from reports and analyses of different sources including the 2016 National Cold Chain Inventory, EVM, cMYP and other health related country strategic documents and publications. The cold chain inventory 2016 was carried out to ascertain the availability of equipment, distribution of equipment, capacity, functional status, source of energy, and compliance to Performance, Quality and Safety (PQS) standards at all levels of the immunization supply chain in Kenya. This led to the development of the CCE expansion and replacement plan (CCEERP). The country CCE capacities, gaps and needs are well detailed in the CCE rehabilitation plan, to which reference can be made. The CCEOP offers an opportunity for Kenya to implement its CCEERP by accessing high performance equipment to replace obsolete and old equipment to improve efficiency within the supply chain, as well as support other efforts of the program in increasing coverage and equity through equitable provision of appropriate CCE that will expand the reach of immunization services.

The table below summarizes the number of equipment to be procured by year and model. Details on the breakdown of equipment selection are provided in Country urgent scale up section.

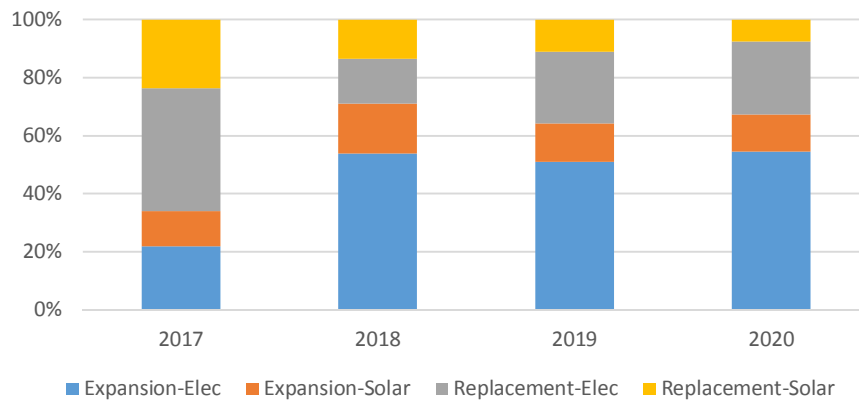
Type of equipment	Equipment Model	Make	2017	2018	2019	2020	Total
Off-grid/SDD refrigerators (without freezer comp.)	BFRV-15 SDD	SunDanzer	469	413	359	167	1,408
Off-grid/SDD refrigerators (without freezer comp.)	VLS 024 Green Line SDD	Vestfrost	65	46	43	21	175
Off-grid/SDD refrigerators (without freezer comp.)	VLS 054 Green Line SDD	Vestfrost	45	5	15	10	75
Off-grid/SDD refrigerators (without freezer comp.)	VLS094 Green Line SDD	Vestfrost	9	4	0	0	13
Off-grid/SDD refrigerators (without freezer comp.)	VLS154 Green Line SDD	Vestfrost	21	3	0	0	24
On-grid ice-lined refrigerator (ILR) (without freezer comp.)	VLS 200A Green Line	Vestfrost	1014	932	1295	770	4,011
On-grid ice-lined refrigerator (ILR) (without freezer comp.)	VLS 300A Green Line	Vestfrost	17	42	20	17	96
On-grid ice-lined refrigerator (ILR) (without freezer comp.)	VLS 350A Green Line	Vestfrost	7	48	2	3	60
On-grid ice-lined refrigerator (ILR) (without freezer comp.)	VLS 400A Green Line	Vestfrost	801	49	7	11	868

The equipment selection process was through a detailed baseline from the cold chain inventory as well as determining the Total cost of ownership using the PATH total cost of ownership tool. The charts below demonstrate the underlying needs being addressed through the CCEOP in terms of equipment expansion vs equipment replacement. There is a very big overlap between expansion and replacement and with several new equipment carrying out both purposes at the same time. For the graphs below expansion is considered as equipment(s) going to a service delivery or sub county store which will have a gap in 2026 according to population growth and increasing vaccine antigens being introduced into the schedule. Equipment replacement was defined as equipment being provided to a facility that will not have a capacity gap in 2026 based on projections, and the main reason for replacement is that the facility is using outdated technology such as absorption fridges, equipment is broken down or has frequent breakdowns, or the equipment is greater than 10 years.



In the first year, the CCEOP will focus on the HSS priority counties which have low coverage, high dropouts and high poverty which reflects the higher number replacement happening in 2017. The focus on 16 HSS priority will ensure that cold chain will not be a bottleneck in achieving and sustaining a high coverage in those counties and have been prioritised in the first year of the CCEOP grant.

Expansion and Replacement by energy source and year



This graph above shows the percentages of the equipment replace and expansion by the energy source available at the facility.

There are also a lot of activities funded through the HSS and other sources that aim to improve the maintenance and repair of cold chain equipment. The general approach of the maintenance and repair strategy is to build the capacity of the County Governments to take over the maintenance and repair of the cold chain system and supply chain system in general. The maintenance and repair strategy involves training and building the capacity of the medical technicians, supporting and facilitating the medical technicians to carry out preventative maintenance and build institutional capacity of the training institutions to carry out effective and up to date pre-service training of the medical technicians.

3. APPLICATION DETAILS



Please review [Section 6](#) of the Platform [Application Instructions](#) for complete information on phased support and application requirements.

3.1 Application requirements overview

Aligning with the Gavi HSS support, the CCE optimisation platform will provide phased support (for a maximum duration of 5 years) which includes: **initial support** (Approximately years 1-2) to address country's most urgent CCE needs; and **scale-up support** (Approximately years 3) to address additional CCE needs as part of transforming the supply chain to support sustainable achievements of coverage and equity targets.

- **Countries must make a single application to the CCE optimisation platform, requesting support for both the 'initial' and 'scale-up' phases.**
- Sufficient, well-functioning cold chain equipment is one **fundamental** prerequisite for an effective immunisation supply chain, complementing the other **fundamentals** comprised of: supply chain managers; data for management; optimised & efficient design of the distribution system; and a continuous improvement process over time. **Support from the CCE optimisation platform should be demonstrated to complement investments from other sources in these fundamentals**

- **Countries should also demonstrate, in their application, how the Platform support will contribute to sustainable improvements in immunisation coverage and equity, consistent with country targets.**

4. APPLICATION REQUEST

This section gives an overview of the types of information the IRC will anticipate from countries in their application for CCE optimisation platform support.

4.1. Situation analysis and requested support

This section must be filled with appropriate reference to the country documents listed in Section 2. Countries are required to provide a narrative in response to the following questions.

Section	Required information
<p>Situation analysis of country's supply chain and CCE (number, distribution, functionalities etc.)</p> <p><u>Provide 3 pages</u></p>	<p>The Kenya immunization supply chain is structurally organised into four levels of storage: one Central Vaccines Store (CVS), 8 regional vaccine stores (RVS), 288 sub county stores and 6,911 health facilities (HF) offering immunization services. Operations at CVS and RVS are managed by the national government through the National Vaccines and Immunization Program (NVIP), while sub-county and HF functions are managed by county governments. Both levels of government have roles and responsibilities in the following components of the immunization supply chain:</p> <ul style="list-style-type: none"> • Forecasting and procurement of vaccines • Transportation and distribution of vaccines • Storage of vaccines and related supplies, and temperature control • Information and data management on immunization supply chain • Immunization supply chain human resources • Quality assurance <p>Forecasting and procurement of vaccines and immunization supplies</p> <p>Vaccine forecasting is a primary responsibility of the national government. The national government carries out a national forecast for vaccines annually with input from the county governments. The national government is also tasked with the procurement of the vaccines; EPI vaccines are procured through UNICEF while non-EPI vaccines and anti-sera are purchased locally through competitive tendering processes.</p> <p>The county governments are responsible for procurement of syringes, safety boxes and other consumables required during vaccination. The county governments procure these mainly through Kenya Medical Supplies Agency (KEMSA) and through local distributors in the country.</p> <p>Due to the different levels of procurement and existing funding gaps, bundling of vaccines and injection devices does not happen adequately. There is therefore the risk of mismatch of immunization consumables and the available vaccines thus affecting service delivery.</p> <p>Challenges</p> <ol style="list-style-type: none"> 1. Determining accurate county and sub-county populations to ensure adequate forecasting and procurement. 2. Inadequate funding for vaccines and related supplies. 3. Unavailability of immunization syringes in the local market, particularly 0.05ml AD syringes for BCG administration, which often leads to stock outs in facilities. <p>Interventions</p> <p>Efforts through joint forecasting and target setting to harmonize data have been made by immunization managers at the two levels of government, including alignment of the forecasts with the Ministry's budgeting cycle. Advocacy activities with national and county leadership to prioritize immunization services, with additional voice from immunization partners, including Gavi secretariat and UNICEF, have resulted in a 71% increase in financing for vaccines by national government between FY 2015/2016 and 2016/2017. To sustain this upward trend, the Ministry of Health continues to lobby members of parliament and key decision makers. Further to this the National Vaccines and Immunization Program is collaborating with KEMSA to ensure vaccine injection devices are well stocked and readily available to counties.</p>

Distribution and transportation of vaccines

The national level is responsible for transportation of vaccines and immunization supplies from the port of entry and up to the RVS. This activity is outsourced to a private logistics firm. The logistics firm contracted to transport vaccines is expected to use refrigerated trucks while at lower levels cold boxes are used. The program also engages KEMSA services in distribution of injection devices at a fee. County governments are responsible for the distribution and transportation of vaccines from the regional store level and up to the HF or outreach site. Some counties have created county stores to manage vaccines within their areas thus creating another storage level in the supply chain, while in others individual sub-counties collect directly from RVS.

Transportation to cover the last mile remains a challenge in a number of counties, especially those that are vast. HF personnel are expected to collect supplies every month from the sub-county stores, most of them using public means. With the increase in the number of antigens offered and unreliable transport, this is becoming increasingly difficult and delivery/collection schedules are not adhered to. The county governments at times will be required to transport some EPI related products like cold chain from the central vaccine store.

Challenges

- 1) Distribution and transportation routes are not streamlined and can improve with better routing and improved planning at the county level.
- 2) Funding for distribution and transportation of vaccines has been a challenge in a few counties.

Interventions

The Ministry is working to support the counties to improve the transportation of vaccines and distribution practices. This will be done through advocacy with key decision makers, building the capacity of county and sub-county managers in resource mobilization and supply chain management. Through the HSS the government plans to support targeted counties with vehicles for carrying out distribution and other immunization related activities

Information and data management on Immunization supply chain

The county governments are responsible for generating the primary data at the facility and sub-county level. Immunization data is reported through the District Health Information System (DHIS). The system is web-based, collecting data from standard Ministry of Health forms, mainly the MoH 710. Data includes immunization coverage and vaccine consumption at HF level. There are other useful sources of data available in hard copies at the facility and sub-county level e.g. Immunization registers, temperature data from fridge tag 2, maintenance log books, etc., but the challenge currently is how to consolidate and analyse this data routinely for decision making. The Ministry's M&E unit is responsible for the management of the DHIS system. NVIP routinely extracts relevant data sets from the DHIS, analyses and provides counties with reports on their performance. The same information is periodically shared with other immunization partners. Other vaccine stock data is collected through manual stock ledgers as well as through an electronic stock management system currently being used at CVS, RVS and 56 sub-county stores. Roll out to remaining sub-counties is ongoing and this system is expected to significantly improve access to vaccine consumption and cold chain data.

Challenges

- 1) Sub-optimal utilization of available data for decision making.
- 2) Available data reporting tools missing some key elements e.g. wastage information
- 3) Data analysis is a challenge at the county level as these skills were mainly centralized at the national level. Therefore, data analysis is mainly implemented at the national level and counties receive reports to action.

Interventions

The Ministry is in the process of introducing a web-based stock management tool with a dashboard that provides summarized information on key performance indicators that managers at all levels can use to take action. Training on the use of this tool is ongoing. The Ministry also plans on training immunization system managers at the county level on improved data handling, analysis and planning interventions. This will be through activities planned in the HSS. The Ministry will also be implementing data quality audits to improve on the source data being collected at facility as well as the summary data that moves up the chain up to the national level.

Immunization supply chain human resources

NVIP human resources for iSCM comprises of one logistician, two warehouse managers, four cold chain technicians, one waste management officer and one quality assurance officer. Each RVS is under one depot manager deployed by host counties. In 4 out of the 8 RVSS, this officer is assisted by KEMSA officers as the vaccine store is within KEMSA premises. HR capacity at national and regional stores is very inadequate. Currently, there is no officer dedicated in two of the RVSS and the program solely relies on KEMSA personnel who have other competing duties, and are answerable to a different chain of command. Each county has an EPI logistician

that coordinates issues of vaccine supply within their respective sub-counties. The sub-county stores are managed by EPI nurses under direct supervision of the Sub-County Public Health nurse (SCPHN). Vaccine administration and stock management at HF level is handled by a nurse, and this could be one person in small health centres and dispensaries, or several HCWs working on rotation basis in larger facilities under the supervision of the facility-in-charge. Further down the supply chain, there is less specialization in roles, and one officer is expected to implement several programs and functions with very little supervision. As a result, maintaining quality standards in immunization service delivery is a big challenge. The same staff is reshuffled frequently with new ones coming into the system with no proper induction.

HR adequacy for iSCM is a challenge at all levels, and in some cases forcing staff to manage several vaccine stores or to merge stores. This, coupled with insufficient supply chain management skills and limited supervision creates inefficiencies within the system.

There is also a lack of ownership between the county and the national level on who is responsible for managing the operations of regional stores. At the moment, this area is still grey as the RVS is under national government while the depot managers are under county government. The same applies when it comes to managing overheads of the regional stores.

Challenges

- 1) Shortage of staff to manage the immunization supply chain system
- 2) Inadequate skills and knowledge
- 3) Limited supervision at all levels
- 4) Lack of clearly defined responsibilities for some tasks and roles across the supply chain

Interventions

There are several interventions going on, with a new health bill currently being drafted in parliament that will help provide clarity on the roles of the different levels in regard to Health. Training and supervision of county, sub county and HF managers in various aspects of iSCM is a key activity in the Gavi HSS planned activities. So far, two immunization officers have been trained through the Regional Centre of Excellence in Rwanda and the Ministry is open to similar opportunities to strengthen its workforce. One of the key activities in this year's AWP is to develop key SOPs and necessary job aids to support iSCM functions. Improving access to self-learning modules through e-learning is also being explored for new and existing officers within the program. The Ministry is also critically looking at the current system design and how best to adapt/reorganize it where possible, to improve efficiency within the context of available HR gap. UNICEF conducted a HR assessment for iSCM in 2015 and the findings are being used to guide future interventions.

Situational Analysis of Country CCE

The supply chain is organized at 4 levels; 1 Central, 8 Regional depots, 288 sub-county stores and 6,911 immunizing health facilities.

National

The national store, located in two sites in Nairobi and Kitengela, has a collective net refrigeration capacity of 144m³, and a freezing capacity of 19m³. Net freezing capacity is provided by two 7m³ walk-in freezer rooms in Kitengela, and a 5m³ walk-in freezer room in Nairobi.

Regional

There are 8 regional vaccine stores that receive quarterly vaccine and supplies distribution from the CVS and serve 288 sub-counties. These sub-county depots collect vaccines from the RVS quarterly. 6,911 health facilities are served by the sub county stores on monthly basis.

Sub-county

As at June 2016, when the CCI was updated:

831 units (78%) of the CCE at sub-county stores were functional. 206 non-functional equipment accounted for 19% of the total sub county CCE.

281 sub-county stores, which account for 98% of the total stores, have electricity, with only 7 depots reporting not being connected to the mains power grid.

At sub-county stores, PQS-compliance is 79% (841 devices). Obsolete equipment accounts for 18% (194 devices). Only 3% (35) of equipment is non-EPI.

Depots also host a significantly smaller share of non-EPI refrigerators than health facilities, with just 35 of these located in a store.

Distribution by PQS equipment and functional status of Equipment at Sub County Depot level			
PIS	0(0%)	Functional	737(84%)

Other/Non-EPI	35(4%)	Non-functional	113(13%)
PQS	841(96%)	Unknown	26(3%)
Total	876		876

Health facilities

82% of health facilities (5,666 out of 6,911) have cold chain equipment with varying degrees of PQS compliance. The remaining 18% (1,245 facilities) mainly provide immunization services by collecting vaccines from other sites with cold chain equipment and using vaccine carriers and cold boxes for brief periods. Procurement of equipment to extend immunisation services is a key priority in the platform application.

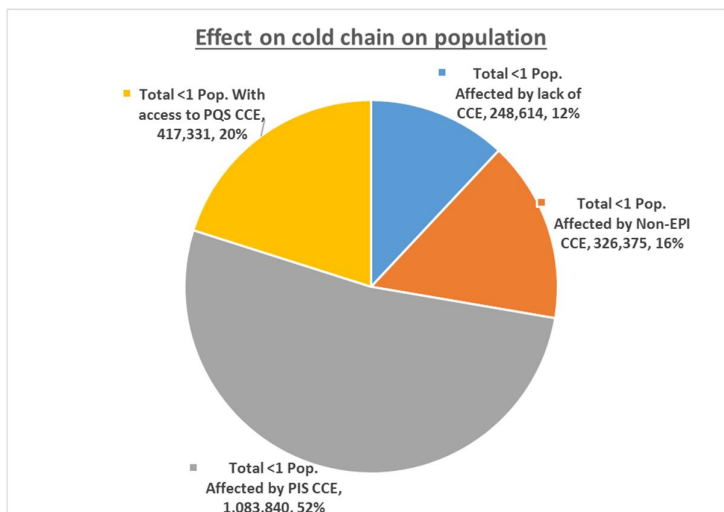
92% of all health facility equipment (5,515 out of 5,972) was reported as being functional, 6% (352) was non-functional. 2% (105) of all the equipment had unknown functionality.

PQS compliance at health facilities is currently at 19.9%. 55.6% of cold chain equipment is PIS, and non-EPI equipment accounts for a 24.5% of total equipment available.

All absorption refrigerators (RCW 42 EG, RCW 50 EG, V170 GE) currently account for 56% (3,322) of all health facility equipment. This group also accounts for 1,749 refrigerators older than 10 years, representing 29% of the facilities' inventory.

Distribution by PQS and functional status at Health Facility level			
Status	Number(%)	Status	Number(%)
PIS	3322(56%)	Functional	5515(92%)
Other/Non-EPI	1464(25%)	Non-functional	352(6%)
PQS	1186(20%)	Unknown	105(2%)
Total	5972	Total	5972

The chart below provides a summary of the distribution of existing CCE by the population they served.



Electrification

70% of the health facilities have access to the national power grid. Electrification varies from County to County with Nairobi County being the most electrified. The Government is also on an ambitious electrification process and the rate of facility electrification will improve over the next few years.

Current bottlenecks

There is a significant number of equipment operating on gas which is an expensive energy source. Looking at the number of facilities with access to grid electricity in relation to the absorption equipment use at facility level, it is evident that replacement of these equipment with high performance technology will result in improved efficiency and significant cost savings both in operations and maintenance.

18% (1245) of immunising health facilities had no cold chain equipment. These are targeted in this proposal for installation of cold chain equipment dependent on electrification status. The lack of cold chain equipment

	<p>hinders the ability of facilities to offer immunization services which is a key component of the Kenya Essential package of Health.</p> <p>This CCEOP proposal seeks to accelerate the rehabilitation of the vaccines cold chain by upgrading existing equipment with higher performing equipment, and to extend immunisation services by equipping facilities without CCE with appropriate cold chain devices.</p> <p>Rehabilitation</p> <p>In order to meet the needs of the above gaps in the vaccines cold chain, the equipment requirements are;</p> <ul style="list-style-type: none"> • 1,695 SDDs for expansion to sites without CCE, expanding the capacity in sites with storage gaps, and replacement of obsolete equipment with higher performing devices. This targets health facilities and sub-county stores not connected to the electricity grid. <p>5,035 ILRs SDDs for expansion to sites without CCE, expanding the capacity in sites with storage gaps, and replacement of obsolete equipment with higher performing devices. This targets health facilities and sub-county stores connected to the electricity grid.</p> <p>Lesson Learnt from Supply chain assessment The EVM of 2013 identified cold chain as a challenge especially at the Sub county and Facility level which scored 56% and 59% in the EVM. There has also been a Temperature monitoring assessment that identified incidences of freezing and period of heat exposure in the cold chain and these informed the introduction of Fridge Tag-2 and is informing the CCEOP application to ensure that equipment in use in country have Grade A freeze protection. Coverage reports, campaign reports and other equity analysis were used to identify coverage gaps and support the prioritization of equipment deployment and distribution.</p>
<p>Country's urgent and scale-up CCE needs (number, distribution, functionalities etc.)</p> <p><u>Provide 1 page</u></p>	<p><u>Situation analysis around urgent or scale-up CCE</u></p> <p>The country plans to ultimately equip all current and future immunizing facilities with optimal equipment by upgrading existing suboptimal equipment and equipping those facilities that currently do not have CCE. This is well detailed in the CCERP. An analysis of administrative data shows that an estimated 356,000 children were not effectively reached with the 3rd dose of Pentavalent vaccine in 2015, with half of these children residing in only 57 or 20% of sub-counties (districts). The gaps will be systematically met through a priority set determined primarily by looking at where large numbers of unvaccinated children exist with a view to support ongoing efforts of reducing equity barriers to access of immunization services among remote and underserved populations including the inner city urban homesteads. The following prioritization criteria are set to guide the implementation of the 5-year CCE Expansion and Replacement Plan and this is based on 2 guiding principles</p> <ol style="list-style-type: none"> 1) Cold Chain Equipment related to capacity requirement: Capacity gap or expansion to meeting current and future programme need having priority in addressing equity and coverage. 2) Cold Chain Equipment related to replacement: equipment type/technology, PQS standards, age, functionality status, operational costs including energy requirements and environmental factors such as CFC free. <p>The prioritization criteria might have a lot of overlaps but this will be managed during the implementation process.</p> <p>Priority1: (2017/2018)</p> <ul style="list-style-type: none"> - All storage levels with capacity gap and replacement requirement: Central Vaccine Stores, Regional hubs, all sub-counties store; - During the development of HSS proposal, Kenya identified Sixteen (16) high priority counties through a scoring criteria based on global multi-dimensional poverty index³, number of un-immunized children and immunization coverage. Forty-two percent or 149,079 of the under vaccinated children are in these counties. - The selected counties with highest score are: Mandera, Wajir, Garissa, Bomet, Bungoma, Meru, Trans-Nzoia, Baringo, Kakamega, Laikipia, Nandi, Homabay, Isiolo, Kitui, Nakuru and Tana River. These Counties will be in the first priority. <p>Priority 1 focuses on Sub county stores that were identified during the EVM as having a cold chain capacity gap and being a serious bottleneck in the cold chain. The Ministry has been procuring and building up the cold chain capacity at the sub county level and the CCEOP will be finally solve the capacity gap at the sub county level and</p>

has been prioritized for year 1.

This priority also focusses on the 16 counties identified as priority counties in the HSS. The prioritization criteria for the HSS involved a multi-dimensional poverty index that took into account the immunization coverage, immunization equity across geography and gender and the poverty level to determine the counties that need urgent and focussed support from the HSS. Under the CCEOP application these counties will be a focus to ensure that cold chain capacity is not a bottle neck and together with the synergies from the HSS grant it is expected to increase and achieve sustainable coverage in these counties.

Priority 2: (2018/2019)

- All service delivery facilities with capacity gap and replacement requirement in 2 counties (Nairobi and Mombasa) as part of the two largest cities with high population living in informal settlements
- All service delivery level facilities with capacity gap and replacement requirement in 9 counties having Pentavalent 3 coverage less than 65%. These counties include Lamu, Kirinyaga, Turkana, West Pokot, Samburu, Uasin Gishu, Narok, Kajiado, and Migori.

Priority 2 focusses on public and a few private facilities in Nairobi and Mombasa county. These are urban counties and have huge populations as well as huge population in urban informal settlements. The health system in these counties also have a large number of private facilities that serve these populations. By supporting these urban counties and supporting both the public and private facilities the aim is to increase coverage by reaching informal populations as well as reduce vaccine wastage from facilities with dysfunctional equipment.

Priority 2 also focusses on the public facilities from 9 counties with a coverage of below 65%. These counties perform better than the 16 counties in priority 1 but in general also have a weak supply chain system and have been prioritized in the urgent scale up as priority 2. There will be general HSS grant support and other partner support in these counties will also ensure synergies are utilized in these counties as well.

Priority 3: (2019/2020)

- All remaining public service delivery facilities with capacity gap and replacement requirement

The remaining facilities in 20 counties that are not addressed in the urgent need have been planned under the scale up phase. These counties are generally stronger with better functioning immunization supply chain system and cold chain system. The public facilities will be prioritized for support under priority 3.

Priority 4: (2020/2021)

- All remaining private service delivery facilities with funding shortfall and located in the proximity where issue of coverage and equity is a concern and those requiring replacement to meet standards

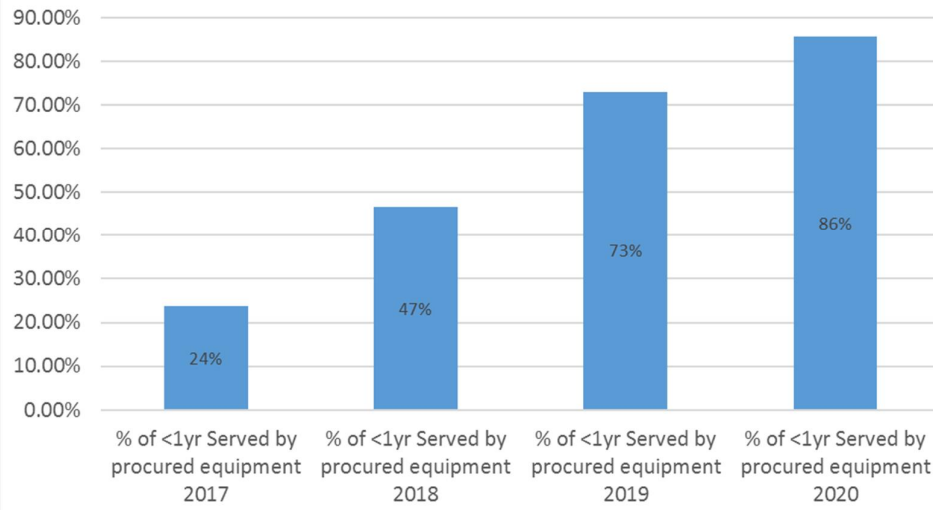
Priority 4 focussed on private facilities that provide immunization services and are currently not equipped with appropriate equipment. Private facilities offer immunization service to the population and also receive vaccines from the Government supply chain system. This priority will lead to an increase coverage by expanding to newer facilities that reach hard to reach populations such as informal settlements as well as reduce vaccine wastage from poor functioning equipment and use of passive containers.

Note: Equipment supplied to private facilities is still property of the Government of Kenya and is on loan to private facilities provided that immunization services are provided by the facility and the national policy is adhered to. The Government already provides several private facilities with cold chain equipment to ensure immunization services are provided in some of these facilities.

Priority 1 and 2 will be covered in the urgent CCE needs phase while 3 and 4 will be covered in the scale up phase.

The following graph shows the % number of children who will be served with optimal equipment during the implementation period of the CCERP through the optimization platform.

Populations Served with PQS equipment



Equipment selection was carried out with a view to determine equipment that is CCEOP compliant and appropriate for use in the country. The three key factors considered in selecting appropriate cold chain equipment are population, facility and cold chain related factors as described below.

- Population requirement of vaccines was taken into account in determining the requirement per child. Vaccines such as HPV and Men A were included as cold chain requirement. Special populations were also accommodated in the cold chain requirement.
- The facility related factors include storage capacities requirement and energy source which provided the facility and equipment segmentation. Due consideration is made in considering the current 70% of health facilities connection to the national grid the future plan to reach coverage higher.
- Cold chain related factors include costs of the cold chain equipment (Both price of the equipment and total cost of equipment ownership), minimum and maximum ambient temperatures in which the Cold Chain equipment will operate, holdover times of the Cold Chain equipment, equipment performance and specifications, availability of local suppliers who can support with local procurement of spare parts and compliance with the WHO PQS and or with the CCEOP if equipment included in the application.

The PATH total cost of ownership tool (TCO) was used in determining the operational cost of the different type of equipment. The following equipment was selected for the different facility segments.

Technology/Model	Unit price	Opex per year	TCO per unit	Net vaccine capacity (liters)	Gross freezer capacity (liters)	Operating range (°C)	Holdover (hours)	Type	Available Liters
SunDanzer BFRV 15 SDD	\$ 2,440	\$ 34	\$ 3,840	15	0	5 to 43	107.48	SDD	1-12
Vestfrost VLS 024 SDD Green Line	\$ 2,844	\$ 34	\$ 4,389	26	0	5 to 43	0	SDD	12-20
Vestfrost VLS 054 Green Line SDD	\$ 3,043	\$ 34	\$ 4,603	56	0	5 to 43	79.4	SDD	20-42
Vestfrost VLS094 Greenline SDD	\$ 3,410	\$ 34	\$ 4,996	92	0	5 to 43	73.5	SDD	43-69
Vestfrost VLS154 Greenline SDD	\$ 4,365	\$ 34	\$ 8,017	170	0	5 to 43	77.75	SDD	70-168
Vestfrost VLS 200A	\$ 638	\$ 94	\$ 2,175	60	0	5 to 43	54	ILR	1-45
Vestfrost VLS 300A	\$ 758	\$ 103	\$ 2,390	98	0	5 to 43	55.5	ILR	45-74
Vestfrost VLS 305A	\$ 857	\$ 98	\$ 2,461	127	0	5 to 43	54.7	ILR	75-95
Vestfrost VLS 400	\$ 864	\$ 112	\$ 2,613	216	0	5 to 43	30	ILR	96-162
B Medical TFW 40 SDD	\$ 5,807	\$ 29	\$ 7,509	64	64	43	120	Freezer	**1-48
Vestfrost MF 114	\$ 436	\$ 190	\$ 2,928	105	105	43	2.8	Freezer	1-78
Vestfrost MF 214	\$ 514	\$ 245	\$ 3,557	171	171	43	2.9	Freezer	78-128
Vestfrost MF 314	\$ 582	\$ 333	\$ 4,518	281	281	43	4	Freezer	128-217

The cold chain capacity requirement was calculated using a modified EVM assistant tool. The Cold chain

inventory was loaded into the EVM assistant tool. The cold chain capacity gap was calculated with current and planned vaccine introductions such as Men A and HPV included in the required capacity of the cold chain. The population forecast of 2022 was used in calculating the cold chain capacity requirement. Using the capacity requirement per facility the equipment selection matrix was used to determine the appropriate equipment for each facility.

The table below provides the number of equipment required by year and the different types of equipment.

Type of equipment	Equipment Model	Make	2017	2018	2019	2020	Total
Off-grid/SDD refrigerators (without freezer comp.)	BFRV-15 SDD	SunDanzer	469	413	359	167	1,408
Off-grid/SDD refrigerators (without freezer comp.)	VLS 024 Green Line SDD	Vestfrost	65	46	43	21	175
Off-grid/SDD refrigerators (without freezer comp.)	VLS 054 Green Line SDD	Vestfrost	45	5	15	10	75
Off-grid/SDD refrigerators (without freezer comp.)	VLS094 Green Line SDD	Vestfrost	9	4	0	0	13
Off-grid/SDD refrigerators (without freezer comp.)	VLS154 Green Line SDD	Vestfrost	21	3	0	0	24
On-grid ice-lined refrigerator (ILR) (without freezer comp.)	VLS 200A Green Line	Vestfrost	1014	932	1295	770	4,011
On-grid ice-lined refrigerator (ILR) (without freezer comp.)	VLS 300A Green Line	Vestfrost	17	42	20	17	96
On-grid ice-lined refrigerator (ILR) (without freezer comp.)	VLS 350A Green Line	Vestfrost	7	48	2	3	60
On-grid ice-lined refrigerator (ILR) (without freezer comp.)	VLS 400A Green Line	Vestfrost	801	49	7	11	868

Expected immunisation coverage, equity and sustainability results

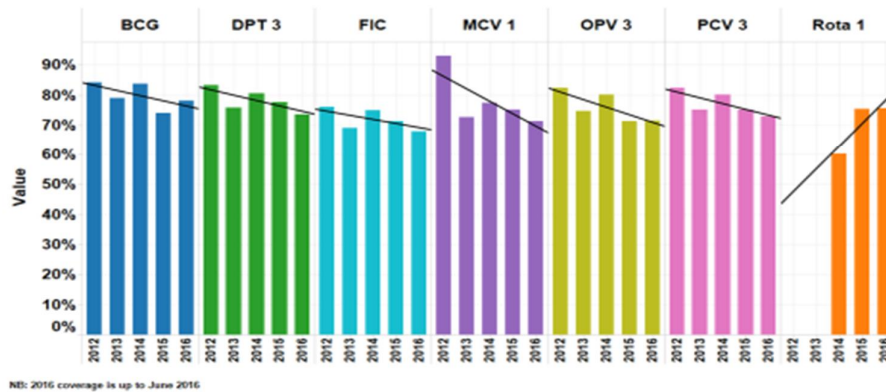
Provide 2 pages

Coverage

Kenya provides seven vaccine formulations through national routine immunization programme. This includes IPV that was introduced in 2015 with support from Gavi. In 2015, an estimated 1,727,698 children were born of whom 1,549,625 survived. Of the surviving infants, 78% received three doses of Penta vaccine, 75% PCV10, 75% Rota and 20% YF (draft JRF 2015). This performance indicates general decline in immunization coverage in 2015 compared to 2014. A two-year HPV vaccine demonstration project conducted in one county between 2013 and early 2015 achieved coverage of 96 and 86 percent in the first and second year respectively.

The dropout rate between Penta 1 and Penta 3 is good indicator of program continuity and follow-up of children in EPI. In 2015 the national Penta 1 – Penta 3 dropout rate was 7.2%, which is less than the target of point of 10% and a sign of good utilization. Only eight Counties had dropout rate of above 10%. Coverage of Measles second dose remains very low with only 28% of the eligible children received the vaccine.

Trend of National Coverage (2012 - 2016)



Kenya conducted Nationwide MR campaign in May 2015 to address the high population immunity gap against Measles and rubella and as initial step towards introduction of MR vaccine. During the vaccination campaign, an estimated 19.5 million children aged between 9 months and 14 years were vaccinated. Results of coverage survey is awaited.

Equity

Between 2014 and 2016, the number of reporting sub-counties (districts) has increased from 285 to 288 with the number of immunizing facilities increasing from 5800 to 6911 during the same period. An estimated 400,000 children were under-vaccinated (DPT3) in 2015 in Kenya, half of them in 67 sub-counties. The number of under vaccinated children had increased by 33,000 between 2014 and 2015. Variations in vaccination coverage across and within counties persist. Access to immunization services, as measured by Penta 1 coverage, is 81% compared to 86% in 2014 with half of sub-counties reporting less than 80% Penta 1 coverage in 2015. Of the 299 Sub-Counties reporting in 2015 only 35.1% (105) reported pentavalent 3 coverage of 80% and above. Only 35.8% of the Sub-Counties had good utilization and access, a decline of 4.2 percentage point from 2014. Nairobi, the county with highest number of urban population, contributed 10% of under vaccinated (Penta 3) children. Low coverages (35%) have also been reported in Mandera county, which has suffered several years of insecurity.

Analysis of health DHS 2014 reports lowest vaccination coverage amongst households in the lowest wealth quintile, with no education and in rural areas. At the national level, there is no difference in immunization coverage based on sex. The picture at subnational level may however be different and there is need to validate these assumptions with surveys such as the DHS 2014. Trend analysis from 1989 to 2014 confirms that access to education and wealth are the two major determinants for full immunization.

Existing cold chain capacity gap has been taken into consideration in development of this proposal, prioritizing on areas that ensure equity and coverage. Four priority categories have been identified.

During the development of HSS proposal, Kenya identified Sixteen (16) high priority counties through a scoring criteria based on global multi-dimensional poverty index, number of un-immunized children and immunization coverage. The selected counties with highest score are: Mandera, Wajir, Garissa, Bomet, Bungoma, Meru, Trans-Nzoia, Baringo, Kakamega, Laikipia, Nandi, Homa-bay, Isiolo, Kitui, Nakuru and Tana River. These counties are considered first priority for the implementation of this proposal.

Nairobi and Mombasa are the two largest cities in Kenya with high population living in informal settlements. Following SARAM (2013), only 34% (Nairobi) and 27% (Mombasa) of primary health facilities provide immunization services. Majority of the underserved population are in informal settlement. Most of the health facilities in these two counties are private health facilities. Availability of KEPH services including immunization is however lower in private facilities compared to public. Nairobi and Mombasa counties will be given second

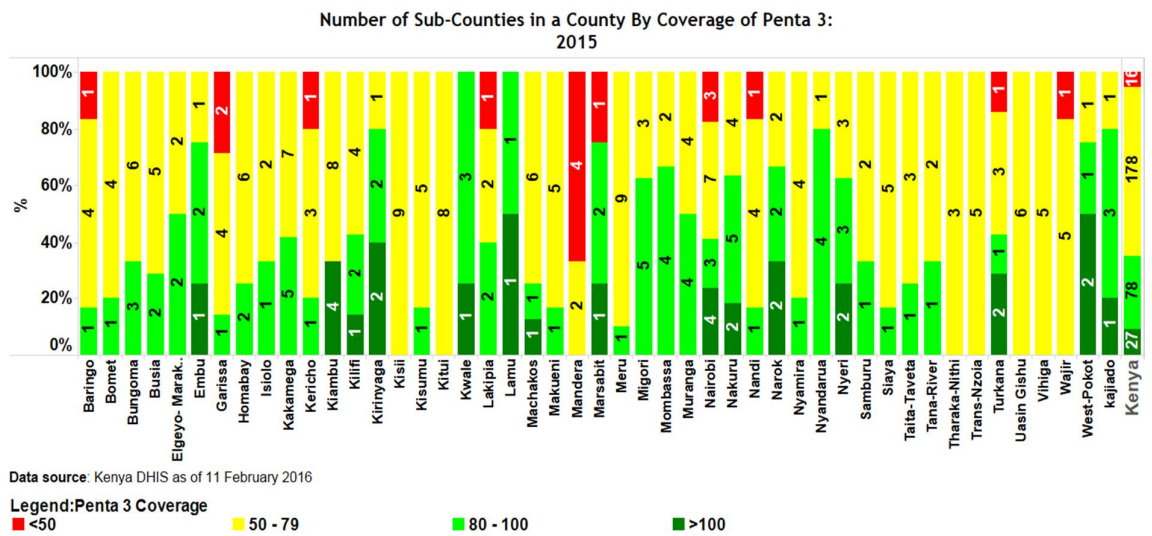
priority

Nine counties (**Lamu, Kirinyaga, Turkana, West Pokot, Samburu, Uasin Gishu, Narok, Kajiado, and Migori**) with coverage of less than 65% are also considered in the second priority lists.

A planned EVM assessment in 2017 will provide information for continuous improvement in the priorities areas targeted by CCEOP. The previous EVM system recommendations were prioritized in the current CCEOP application such as focusing on Sub county stores cold chain capacity. Under the HSS there are several system supply chain system assessments planned which will inform system improvements such as integration of immunization supply chain into essential medical supply chain.

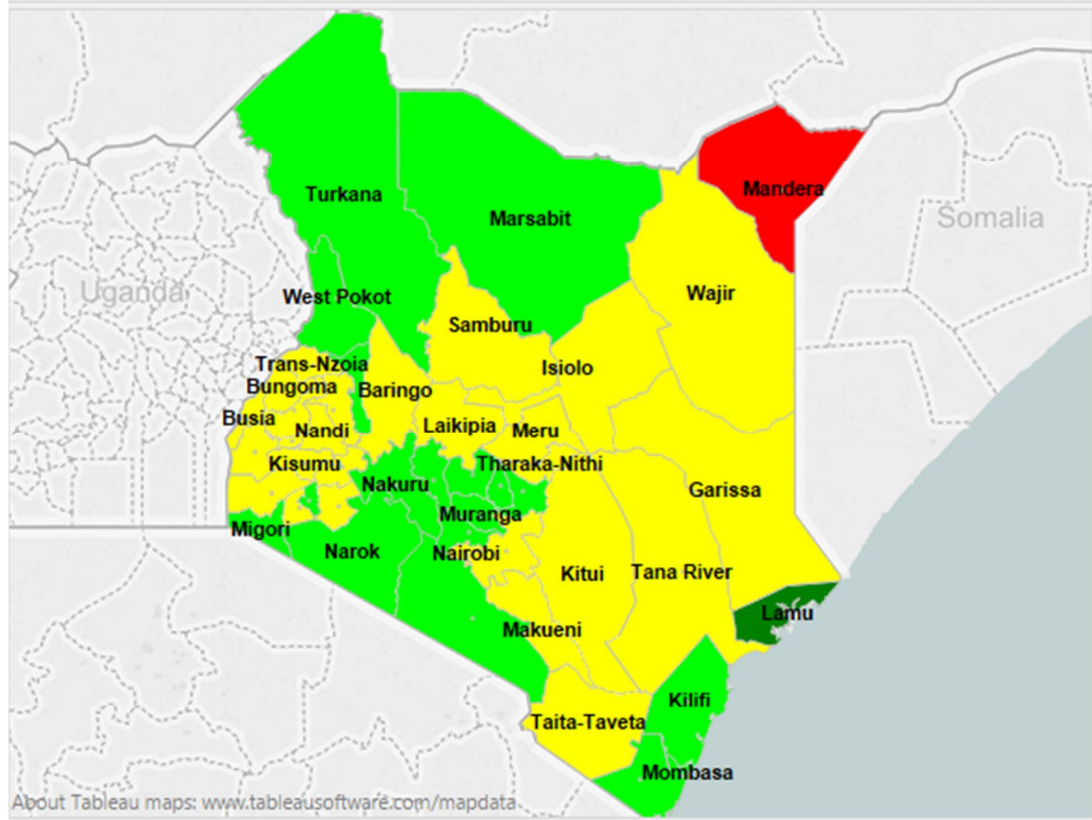
The country is also carrying out a continuous advocacy process for overall immunization financing, including immunization integrated supply chain, at both county and national level through the HSS grant will provide a channel to ensure sustainability post-CCEOP implementation. The national level will also continue to support County Governments in guiding the maintenance, procurement and placement of cold chain equipment within the counties and this will also ensure sustainability of CCEOP project post implementation.

Figure showing coverage gap between sub counties in the counties



Map showing coverage of Pentavalent in all counties

Penta 3 Coverage by County - 2015



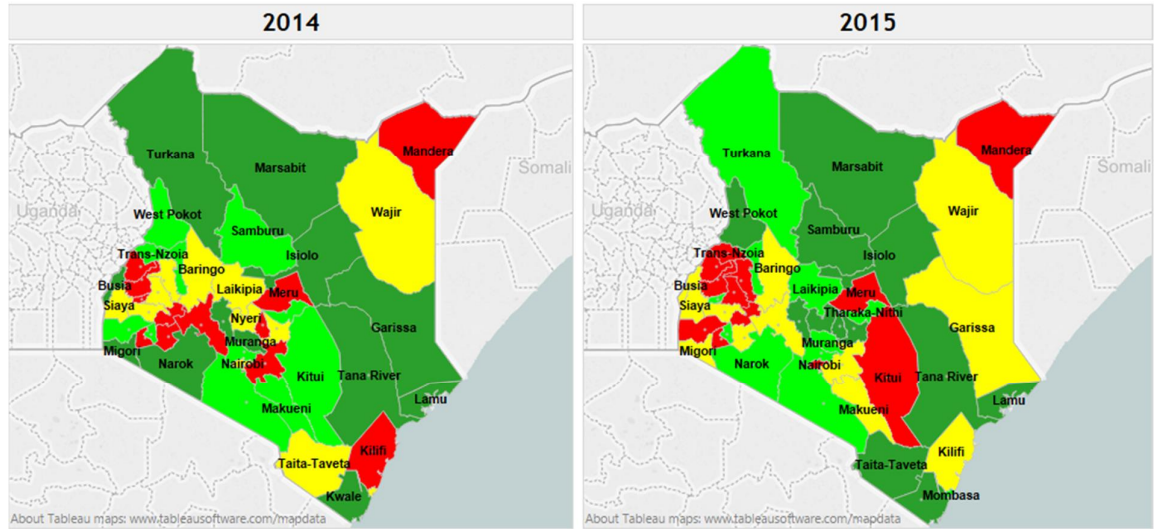
Data source: Kenya DHIS as of Feb 11, 2016

Legend: Penta 3 Coverage

■ <50 ■ 50 - 79 ■ 80 - 100 ■ >100

Map showing distribution of under-vaccinated children by County

Un-immunized children for Penta 3 2014 - 2015



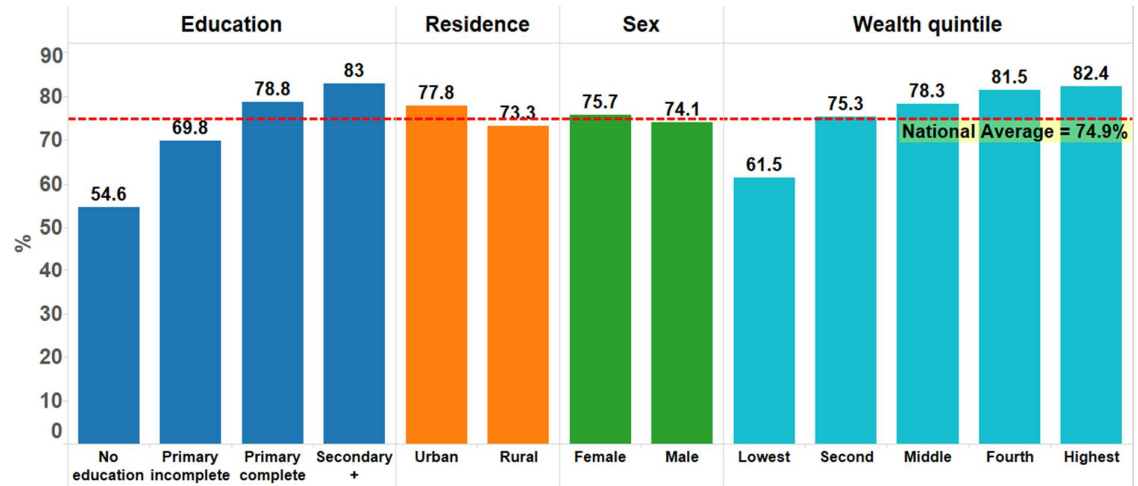
Legend: Unimmunized Children 2014

- 1st Quartile (<2349)
- 2nd Quartile (2349 - 5303)
- 3rd Quartile (5303 - 9457)
- 4th Quartile (>=9457)

Legend: Unimmunized Children 2015

- 1st Quartile (<3182)
- 2nd Quartile (3182 - 7044)
- 3rd Quartile (7044 - 11225)
- 4th Quartile (>=11225)

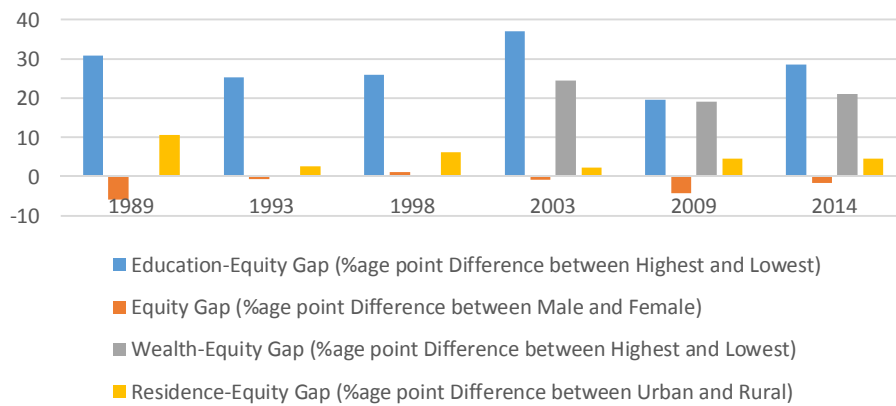
Figure: Percentage of Children Fully Immunized by socio-economic characteristics



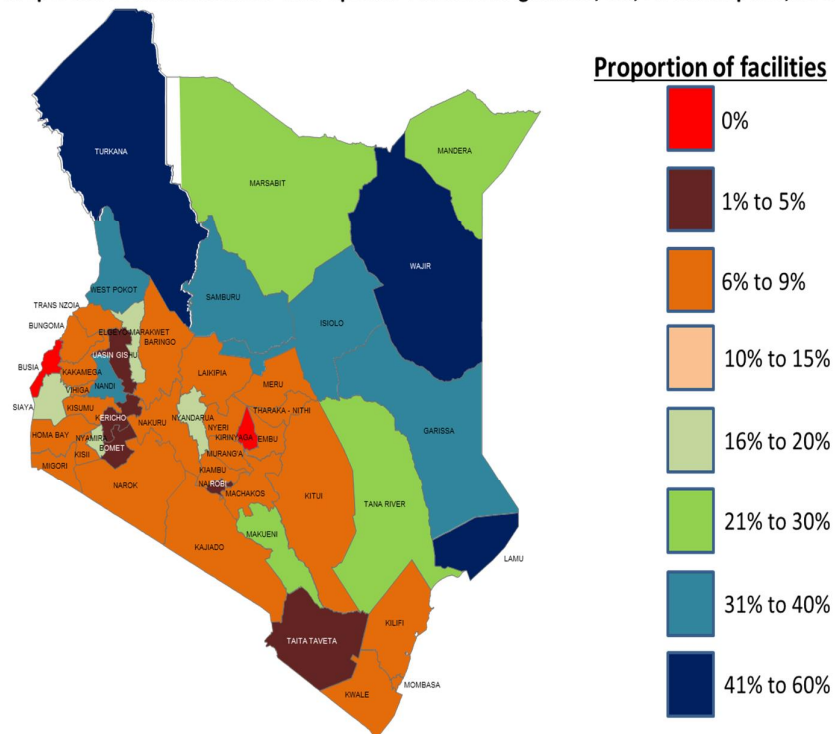
Source: Kenya Demographic and Health Survey (KDHS) 2014

Graph showing percentage gaps of coverage using socioeconomic indicators

Trends in Socio economic disparities in immunization (FIC) 1989 to 2014 DHS



Proportion of health facilities with optimal vaccine refrigerators, i.e., Not absorption, not Non-EPI



Maintenance plan (and its source of funding) and equipment disposal

The Ministry of Health has Medical Engineering Technicians (METs) who major in maintenance and repair of all medical equipment including cold chain equipment. These officers undergo additional and focused cold chain maintenance training while on the Job and this is through a mix of manufacturer, MOH and partner led trainings.

There are four METS working as cold chain technicians in charge of the Central Vaccine Store and the Regional depots. They monitor equipment, conduct routine maintenance, update and maintain cold chain

**Provide 2
pages**

inventory, forecast CCE requirements, attend to corrective maintenance issues and conduct cold chain training for the Medical Engineering Technicians (METs) at County and sub county levels.

At the sub county and health facility level, CCE maintenance is overseen by the County and sub county METs. At the moment, each county has one technician who supervises all technicians at sub county level. There are 167 sub-county technicians out of the 288 sub counties in Kenya. Each sub county requires at least one technician to monitor the CCE performance in all health facilities within jurisdiction. Therefore, there is a deficit of 121 technicians. At the health facility level, the nurse in charge interacts with the CCE on a day to day basis and perform basic preventive maintenance issues like temperature monitoring, cleaning, defrosting and basic trouble shooting.

Preventive and corrective maintenance of installed CCE in Kenya is provided by Ministry of Health and is based on the existing vaccine holding levels with dedicated focal persons at national and regional levels. The maintenance plan indicates the frequency of the preventive maintenance carried out at all levels of service. There are daily, weekly, monthly tasks done by the user level and monthly, quarterly, semi-annual and annual tasks done by METs at various levels. Corrective maintenance is based on an issue-escalation model. Sub county cold chain technicians address maintenance requests from health facilities and these are escalated to technicians at the central level if needed. Currently, this process is very passive and fully depends on the initiative of the users to report breakdowns. Otherwise the equipment can remain in a malfunctioning or non-functioning state for prolonged periods of time.

The country envisages an effective EPI cold chain system that tracks CCE functionality and offers timely support and response to equipment failure from health facility to national levels. All CCE are fitted with FT2 that continuously monitors temperature and raises alarm whenever there are temperature excursions. The system of temperature monitoring is currently manual and is based on reports prepared on a monthly basis and submitted from one level to the other. Temperature monitoring which is an integral part of vaccine management can be optimized through automation. Real time data will be available at all levels hence prompt response to emerging issues.

Maintenance of equipment has not been adequately conducted largely due to lack of trained personnel, unavailability of spare parts and inadequate funding for travel and related expenses. In addition there is poor visibility of CCE performance and lack of a robust CCE issue tracking and response system. To mitigate these gaps, the program has in the recent past conducted various trainings aimed at enhancing the knowledge and skills of METS and frontline health workers on cold chain maintenance although the initiative to achieve required levels has been slow mainly because of funding constraints. The Ministry will implement a planned preventative maintenance in all counties using the Gavi HSS to ensure that current and future cold chain are managed optimally and this will be sustained by the County Governments once the utility of planned preventative maintenance is presented to them during and after the HSS. The process will be supported by data collected showing performance of CCE, including number of alarms triggered within a period of time. The country through HSS and other partners support plans to install remote temperature monitoring devices at regional stores and all subcounty stores. These will be linked to dashboards with issue tracking indicators to improve CCE performance visibility. Help Desks with trained CC technicians will monitor and ensure timely and appropriate action is taken in the event of temperature excursions. The dashboards will enable managers and decision makers to:

- a) Remotely monitor CC temperature, diagnose and repair certain refrigerator models
- b) Respond to cold chain failure faster by making informed decision on spare parts quantification and ordering
- c) Turn on generator manually (if not on AUTO Mode) when mains power fails
- d) Advice on selection of appropriate and high performance CCE during procurement

Other initiatives to optimize cold chain maintenance include facilitating county workshops to carry out additional tasks including maintenance, mentorship and support supervision and holding sensitization

workshops with the 10 medical engineering training institutions to sensitize lecturers on the new technologies on EPI cold chain and vaccine management.

To ensure adequate funding for CCE maintenance and other supply chain activities, the Ministry continues to support and advocate for adequate financing by county governments. One way has been to help counties plan for cold chain through development of county specific CCE replacement and expansion plans. The Ministry of health with support from development partners and other stakeholders supplement the county efforts. The government has for example been able to procure cold chain spare parts through support from partners such as JICA, UNICEF and KFW bank. This has enabled the country to clear a backlog of broken down equipment as reflected in the 2016 CCE inventory; there is a reduction in the rate of non-functional equipment. Other opportunities such as the Gavi HSS funding and Gavi CCEOP funding will strengthen the CC system through procurement of cold chain spare parts, maintenance kits, TMDs and motor bikes to facilitate METs movement which will go a long way in improving cold chain repair and maintenance.

The Disposal of CCE will be in line with the Kenya Public Procurement and Disposal act. The Act describes the procedure of disposal of Government equipment. Disposal will also be in line with the National Environmental Management Agency guidelines on disposal of solid waste. The disposal of refrigerant will also follow a strict code to ensure that refrigerants are disposed of adequately prior to the equipment being decommissioned and disposed. This will include recovery and disposal of the refrigerants through high temperature incinerators that are available in all counties. The Kenya Public Procurement and Disposal act prescribes 5 main disposal mechanism and disposal of the aged equipment will follow the Kenya law on disposal. The 5 main disposal methods are

1. transfer to another public entity or part of a public entity, with or without financial adjustment;
2. sale by public tender;
3. sale by public auction; or
4. destruction, dumping or burying;
5. trade-in

The program will support the counties by ensuring that the public procurement and disposal act is adhered to and any challenges faced are tackled as quickly as possible.

Through this application Kenya plans to procure CCE and services worth of \$13,586,956.44 of which 50%, US\$ 6,793,478.22 will be covered with this application. The country will co- invest 50% of the total amount through sources as provide below:

Funding source	Amount	Duration	Status
Kenya HSS funding	US\$ 3,038,298.58	2017-2019	Secured
Kenya ISS funding	US\$ 2,203,140.00	End 2017	Secured
GoK, County Governments, Development partners	US\$ 1,552,039.64	Continuous	Pending

The CCERP outlines the criteria by which Kenya is going to implement CCE rehabilitation and has established 4 priority categories. The funds required to implement activities scheduled for 2017 to 2019 are secured under the Gavi HSS and ISS. This leaves an unsecured fund of US\$ 1,552,039.64 to be raised by the Government of Kenya and other developing partners. This funds are meant for priority 4 and are due in 2020 which gives the government adequate time to fund raise from its own resources as well as its development partners.

The Government has in the recent past received resources to improve the cold chain system. Some notable support includes funding by the JICA program (1.2 Billion Kenya shillings) and KFW bank project implemented by UNICEF (USD 3 Million). Several other partners such as USAID continue to routinely fund the cold chain through USAID funded programs.

Other implementation details

Provide 1 page

Devolution of health services has provided an opportunity to address inequities in access to health services. Several counties (Kisumu, Nairobi, Mandera, Wajir, Kitui and Makueni) have recently procured cold chain equipment through local county funds to expand the reach for immunization services.

The Ministry of Health is exempted from paying taxes for official Aid funded projects as per the sixth schedule contained in the provincial order of Taxes and Duty Act dated 14th June, 2001. Through a gazette supplement dated 19th September, 2014 the Ministry is also exempted from paying Railway Development Levy. The Ministry will present the list of selected CCE to the national Treasury for inclusion in the master list to ensure smooth clearance processes.

In implementing the CCEOP the National ministry of health will interact with the supplier and/or a representative to ensure that the CCEOP project is administered adequately. The Ministry will provide the manufacturer and their representative with the list of facilities, provide key contact persons in all the counties and sub counties, track and monitor shipment documentation and installation reports and will finally supervise the installation.

4.2 Initial support phase

This initial support is designed to address urgent CCE needs through years 1 and 2.

Provide maximum 3 pages, comprising:

- **2 to 4 prioritised URGENT CCE needs** as identified in the ‘CCE rehabilitation and expansion plan, equipment selection and strategic deployment plan requirements’ (see Annex 3 of the Application Instructions),
- **Description** of planned or ongoing activities related to other supply chain “fundamentals”.

4.2.1 Prioritised URGENT CCE needs

<div style="display: flex; align-items: center;"> <div style="border: 1px solid black; border-radius: 50%; width: 30px; height: 30px; display: flex; align-items: center; justify-content: center; margin-right: 10px;">i</div> <div> <p>Budgets <u>not inclusive</u> of operational cost (Operational costs to be financed by Ministry of Health or other partners)</p> </div> </div>	
<p><i>Prioritised (URGENT) CCE need 1:</i></p>	<p>Priority1: (2017/2018)</p> <p>The CCERP puts the following under priority one:</p> <ol style="list-style-type: none"> 1. All storage levels with capacity gap and replacement requirement: Central Vaccine Stores, Regional hubs, all sub-counties stores. Under the CCEOP the sub-county and the facilities will be the focus of the grant while the Central Vaccine stores and Regional hubs cold rooms will be supported through other mechanisms. 2. During the development of HSS proposal, Kenya identified Sixteen (16) high priority counties through a scoring criteria based on global multi-dimensional poverty index⁴, number of un-immunized children and immunization coverage. Forty-two percent or 149,079 of the under vaccinated children are in these counties. <ul style="list-style-type: none"> - The selected counties with highest score are: Mandera, Wajir,

Garissa, Bomet, Bungoma, Meru, Trans-Nzoia, Baringo, Kakamega, Laikipia, Nandi, Homabay, Isiolo, Kitui, Nakuru and Tana River. These Counties will be in the first priority.

Equipment Type	Quantity
Sundanzer BFRV 15 SDD	469
Vestfrost VLS 024 Green Line SDD	65
Vestfrost VLS 054 Green Line SDD	45
Vestfrost VLS094 Greenline SDD	9
Vestfrost VLS 145 Greenline SDD	21
Vestfrost VLS 200A	1014
Vestfrost VLS 300A	17
Vestfrost VLS 350A	7
Vestfrost VLS 400A	801
TOTAL CCE	2448
Other Device	
Remote/central TMD	2
Spare parts - 2448	2448
Fridge tags - 3748	3748

Total CCE Budget:

'Total budget' includes Gavi and country joint investment share: \$(XX)
Total request: 5,087,389.85 Co-payment: \$US 2,543,694.93

*Prioritised (URGENT)
CCE need 2:*

*The need; Justification; Expected outcome
(See guidance as per prioritised need 1, above)*

Priority 2: (2018/2019)

- All service delivery facilities with capacity gap and replacement requirement in 2 counties (Nairobi and Mombasa) as part of the two largest cities with high population living in informal settlements
- All service deliver level facilities with capacity gap and replacement requirement in 9 counties (Lamu, Kirinyaga, Turkana, West Pokot, Samburu, Uasin Gishu, Narok, Kajiado, and Migori) having Penta 3 coverage less than 65%.

Equipment Type	Quantity
Sundanzer BFRV 15 SDD	413
Vestfrost VLS 024 Green Line SDD	46
Vestfrost VLS 054 Green Line SDD	5
Vestfrost VLS094 Greenline SDD	4
Vestfrost VLS 145 Greenline SDD	3
Vestfrost VLS 200A	932
Vestfrost VLS 300A	42
Vestfrost VLS 350A	48
Vestfrost VLS 400A	49
TOTAL CCE	1542
Other Device	
Remote/central TMD	3
Spare parts -	1542
Fridge tags -	1542

Total CCE Budget:	Total request: US\$ 3,175,060.80. Co-Payment: \$US 1,587,530.40
GRAND TOTAL CCE BUDGET: 'Initial support' (Years 1 and 2)	Total: US\$ 8,262,450.66 Co-payment: US\$ 4,131,225.33

4.2.2 Ongoing or planned activities around other supply chain fundamentals in the initial support phase

In this section, linkages must be drawn between requested CCE Optimisation Platform support, on-going Gavi investments (especially through the Health Systems Strengthening support) and other partner supply chain support.

Describe planned or ongoing activities related to other supply chain “fundamentals” (see section 3 of the Application Instructions) during the initial support phase, including their sources of funding. Responses to this section should be linked to the EVM Improvement Plan.

Supply chain managers

In the HSS funding, there are plans to conduct MLM training on EPI for CHMTs/SCHMTs in all 16 focus counties annually. This will improve the capacity of supply chain managers at the county level many of whom are new to their managerial responsibilities. This training will ensure that the management of the supply system is in line with national policy and standards and also provide the requisite skills to enable the manager to improve on the county and sub county immunization supply chain systems

Capacity building of 47 cold chain technicians on maintenance of existing CCE will be supported through the TCA. The cold chain technician will have their capacity build in both technical and operational skills as well as managerial skills. This skill set will enable the cold chain technicians to not only repair equipment but also manage the county cold chain system as well.

Identification and monitoring of supply chain key performance indicator at the national level and at county level will be carried out by the Ministry of Health. The development and implementation of this process will be supported through the HSS.

Data for supply chain management

The following activities will be carried out with support from the HSS grant.

- Enhance the capacity (knowledge, skills and practice) of Healthcare providers and managers at national and counties in immunization data management including analysis and use for decision making. This skill is critical for managers at the county level to ensure that interventions and activities are supported by data.
- Develop interface to link coverage data with vaccine utilization through the electronic stock management tool. This activity will enhance data visibility and therefore guide interventions around the supply chain as well as support monitoring and evaluation activities related to the wider immunization supply chain data.
- Pilot electronic registers at HF level in two counties. The Ministry will develop and deploy an electronic register at HF level in two counties to assess the feasibility of electronic registers. If this is successful plans on scale up will then be developed.

Outside of the HSS there are ongoing data reviews being conducted regularly to ensure that data being collected is reliable. The Ministry of Health is also leveraging on other activities such as campaigns to review and improve on the data management of immunization supply as an ongoing process.

Optimised, efficient design of distribution system

Will be greatly be improved through the HSS Application which will support the following activities: -

- Engagement of a supply chain strengthening technical assistance to support improved data collection, analysis and system optimization
- All sub county medical engineers will undertake a planned preventative maintenance. The planned preventative maintenance has been budgeted in the HSS and will be moved to the county Government as the grant progresses.
- Conducting sensitization workshop for Biomedical engineering lecturers on EPI update and new technologies for incorporation into the pre service curriculum will also be carried out under the HSS with aim to ensure that biomedical trainees are taught on current practices and technology.
- Procurement of 47 Motorcycles to facilitate movement of engineers in implementing planned preventative maintenance. This activity will ensure that the planned preventative maintenance is implemented in the country.

Outside of the HSS there are several other planned assessments such as the EVM and other ad hoc assessments such as a review of private sector role in the Immunization program which will guide the development of an optimised and efficient system.

Continuous improvement process

This will be done through

- By Carrying out training for health facilities on the temperature monitoring and response system to health facilities. This will help improve temperature monitoring and more importantly response to temperature excursions to avoid vaccine damage through temperature excursions.
- Development of online immunization repository to improve access to EPI resources/materials. Will be a source for information that will help health care worker practice through continuous self-improvement. This resource will also be available to training institutions, private sector practitioners and students in the health field and should also help to improve their knowledge.

4.3 Reviewing implementation of initial support activities

Support for approximately years 3 onwards will be contingent on reporting and performance of activities implemented during the initial support phase.

4.4 Scale-up support phase

This second phase of Gavi CCE optimisation platform support will be provided for approximately year 3 onwards.

Provide maximum 3 pages, comprising:

- **2 to 4 prioritised ADDITIONAL CCE needs** as identified in the 'CCE rehabilitation and expansion plan, equipment selection and strategic deployment plan requirements' (see Annex 3 of the Application Instructions),
- **Description of planned activities related to other supply chain "fundamentals"**.

4.4.1 Prioritised ADDITIONAL CCE needs

i Budgets not inclusive of operational cost
(Operational costs to be financed by Ministry of Health or other partners)

<p><i>Prioritised (ADDITIONAL) CCE need 1:</i></p>	<p>Priority 3: (2019/2020)</p> <ul style="list-style-type: none"> - All remaining public sector service delivery facilities with capacity gap and replacement requirement <table border="1" data-bbox="573 281 1352 789"> <thead> <tr> <th>Equipment Type</th> <th>Quantity</th> </tr> </thead> <tbody> <tr> <td>Sundanzer BFRV 15 SDD</td> <td>359</td> </tr> <tr> <td>Vestfrost VLS 024 Green Line SDD</td> <td>43</td> </tr> <tr> <td>Vestfrost VLS 054 Green Line SDD</td> <td>15</td> </tr> <tr> <td>Vestfrost VLS 200A</td> <td>1295</td> </tr> <tr> <td>Vestfrost VLS 300A</td> <td>20</td> </tr> <tr> <td>Vestfrost VLS 350A</td> <td>2</td> </tr> <tr> <td>Vestfrost VLS 400A</td> <td>7</td> </tr> <tr> <td>TOTAL CCE</td> <td>1741</td> </tr> <tr> <td>Other Device</td> <td></td> </tr> <tr> <td>Remote/central TMD</td> <td>5</td> </tr> <tr> <td>Spare parts - 2448</td> <td>1741</td> </tr> <tr> <td>Fridge tags - 3748</td> <td>1741</td> </tr> </tbody> </table>	Equipment Type	Quantity	Sundanzer BFRV 15 SDD	359	Vestfrost VLS 024 Green Line SDD	43	Vestfrost VLS 054 Green Line SDD	15	Vestfrost VLS 200A	1295	Vestfrost VLS 300A	20	Vestfrost VLS 350A	2	Vestfrost VLS 400A	7	TOTAL CCE	1741	Other Device		Remote/central TMD	5	Spare parts - 2448	1741	Fridge tags - 3748	1741
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<p>Total CCE Budget⁵:</p>	<p>Total request: US \$ 3,285,842.01. Co-payment: US \$1,642,921.01</p>																										
<p><i>Prioritised (ADDITIONAL) CCE need 2:</i></p>	<p>Priority 4: (2020/2021)</p> <ul style="list-style-type: none"> - All remaining private facilities with funding shortfall that have capacity gaps or require CCE replacement and are located in counties where coverage and equity is a concern <table border="1" data-bbox="573 1127 1352 1635"> <thead> <tr> <th>Equipment Type</th> <th>Quantity</th> </tr> </thead> <tbody> <tr> <td>Sundanzer BFRV 15 SDD</td> <td>167</td> </tr> <tr> <td>Vestfrost VLS 024 Green Line SDD</td> <td>21</td> </tr> <tr> <td>Vestfrost VLS 054 Green Line SDD</td> <td>10</td> </tr> <tr> <td>Vestfrost VLS 200A</td> <td>770</td> </tr> <tr> <td>Vestfrost VLS 300A</td> <td>17</td> </tr> <tr> <td>Vestfrost VLS 350A</td> <td>3</td> </tr> <tr> <td>Vestfrost VLS 400A</td> <td>11</td> </tr> <tr> <td>TOTAL CCE</td> <td>999</td> </tr> <tr> <td>Other Device</td> <td></td> </tr> <tr> <td>Remote/central TMD</td> <td></td> </tr> <tr> <td>Spare parts - 2448</td> <td>999</td> </tr> <tr> <td>Fridge tags - 3748</td> <td>6395</td> </tr> </tbody> </table>	Equipment Type	Quantity	Sundanzer BFRV 15 SDD	167	Vestfrost VLS 024 Green Line SDD	21	Vestfrost VLS 054 Green Line SDD	10	Vestfrost VLS 200A	770	Vestfrost VLS 300A	17	Vestfrost VLS 350A	3	Vestfrost VLS 400A	11	TOTAL CCE	999	Other Device		Remote/central TMD		Spare parts - 2448	999	Fridge tags - 3748	6395
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<p>Total CCE Budget:</p>	<p>Total request US \$2,038,663.77. Co-payment \$: US 1,019,331.88</p>																										
<p>GRAND TOTAL CCE BUDGET: 'Scale-up support' (Year 3, 4, 5)</p>	<p>Total: US\$ 5,324,505.78 Co-payment: US\$ 2,662,252.89</p>																										

⁵ Budget not inclusive of operational cost to be financed by Ministry of Health and other partners

4.4.2 Planned activities around other supply chain fundamentals in the scale-up

In this section, linkages must be drawn between requested CCE Optimisation Platform support, on-going Gavi investments (especially through the Health Systems Strengthening support) and other partner supply chain support.

support phase

Describe planned activities related to other supply chain “fundamentals” (see section 3 of the Application Instructions) during the scale-up support phase, including their sources of funding. Responses to this section should be linked to the EVM Improvement Plan.

Supply chain managers

Technical assistance has been requested for WHO and UNICEF as per the Ministry of Health workplans and the CMYP document. The Technical Assistance support requested is related to vaccine supply chains are:-

- Resources in updating and implementation of cold chain replacement expansion and maintenance plan (REM)
- Cold chain technician training on maintenance and repair of CCE.

Data for supply chain management

The Ministry of Health will continue to strengthen the Stock Management at sub county level with support for the of the electronic logistic management system (Chanjo) and will continue to increase utility by updating the eLMIS functionality.

Optimised, efficient design of distribution system

Several assessment carried out in the urgent phase during the HSS will be scaled up during the support phase and the activities related to optimizing the distribution system will be detailed through the updated CMYP and other annual work plans.

Continuous improvement process

This will be done through the continuous feedback by the robust National Logistics working group that gives update to the National Technical Working group provides opportunities for continuous improvement.

5. BUDGET TEMPLATES

This section details the number of requested equipment items and equivalent budget. A maximum investment amount (and indicative number of equipment items) corresponding to the phased support request will be considered for recommendation of approval by the IRC and subsequent decision by Gavi.

However, in consultation with the Secretariat and in-country partners, the number of equipment items may be modified when the detailed operational plan is developed subsequent to the Platform proposal and the support may vary within the limit of the approved maximum amount.

- **Countries can fill one of two CCE optimisation platform Budget Templates:**
 - **Either** budget template number **01**;
 - **Or** budget template number **02**

Budgets must be completed in the embedded budget template, and with reference to the CCE optimisation platform Application Instructions, Gavi CCE optimisation platform Technology Guide and CCE planning prices and TCO analysis tool.

CCE optimisation platform -Budget Template 01 (strongly encouraged)

To be filled by countries that have selected generic equipment categories that best suit their CCE needs (e.g. 'ILR 90L' i.e. Not specific model or make).

Planning price ranges are provided in this template.

Budget Template 01
Generic CCE.xlsx

CCE optimisation platform -Budget Template 02

To be filled by countries that have selected specific equipment that best suit their CCE needs (e.g. specific model and make).

Countries will plan with indicative PQS prices and corresponding service bundle estimates (depending on equipment being on/off-grid and estimated costs of service bundle).

Planning price ranges are provided in this template.

Budget Template 02
Specific CCE.xlsx

6. PERFORMANCE FRAMEWORK

Countries must include CCE Optimisation Platform indicators into the Performance Framework for the current and/or proposed Gavi HSS support, after Platform proposal approval.

According to their specific context, countries are required to consider the most appropriate data sources to report on programme implementation and progress against the targets set. This should be discussed with partners (which may provide technical assistance) and the Gavi Secretariat.

Programmatic reporting updates, as well as targets and indicator updates, will be made as part of the Gavi performance framework and annual Joint Appraisal process. Countries are expected to consider relevant smart indicators to be monitored and reported against, in terms of intermediate results or outcomes/impact.

Data sources

The following data sources are examples that countries may want to choose from when establishing performance framework indicators and targets:

- | | |
|--|---|
| <ul style="list-style-type: none"> • DHIS2 • DVDMT • HMIS • WHO/UNICEF joint reporting form (JRF) • Health facility assessments that include cold chain | <ul style="list-style-type: none"> • Vaccine stock ledgers • Wastage reporting tools • Cold chain equipment inventories • On-site assessments of equipment functioning • Routine monitoring with continuous temperature monitoring devices |
|--|---|

Indicator monitoring and reporting requirements

As a *minimum*, countries need to monitor and report on:

- **3 MANDATORY intermediate results indicators; and**
- **1 to 3 ADDITIONAL intermediate results indicator(s)**

MANDATORY intermediate results indicators (must include baseline, data source, targets and frequency of reporting):

1. Number of equipped facilities replacing CCE with (any) platform-eligible ILR, SDD or long-term passive devices, and irrespective of their funding source;
2. Number of facilities previously without equipment that is equipped with platform-eligible equipment (i.e. ILRs, SDDs or long-term passive devices);
3. Percentage of equipped facilities with functioning cold chain evidenced through Temperature Alarm tracking: Frequency and duration of temperature excursions during review period to determine non-functioning equipment

ADDITIONAL intermediate results indicator(s): *Countries are required to suggest 1 to 3 intermediate results indicators to track performance of rehabilitation, expansion, maintenance and/or other supply chain fundamentals (include baseline, data source, targets and frequency of reporting):*

1. Functional status of cold chain equipment: Ratio of functional CCE by national and county level
2. Number of health managers trained and despatched for supply chain oversight function and rate of reported monitoring activities.