South Sudan Cold Chain Optimisation Platform Application for September 2016 (only)

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

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

HSS	Application Guidelines for countries wishing to request HSS support is available here: www.gavi.org/support/apply
AI	Application Instructions for countries wishing to request CCE optimisation platform support is available here: www.gavi.org/support/apply
CCE OP Tech Guide	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/
	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

Additionally:

i	This signals important information that is provided within this application form

Acronym	Acronym meaning
CC	Cold Chain Officer
CCE	Cold Chain Equipment
CCEOP	Cold Chain Equipment Optimization Platform
CCT	Cold Chain Technicians
CDC	Centre for Disease Control
CFC	Chloro-Floro Carbon
EPI	Expanded Programme on Immunization
EVM	Effective Vaccine Management
EVMA	Effective Vaccine Management Assessment
Gavi	Global alliance for vaccines and immunizations
GOSS	Government of South Sudan
HF	Health Facility
HSS	Health System Strengthening
ICC	Inter-Agency Coordinating Committee
ILR	Ice-lined Refrigerator
IMT	Inventory Management Tool
LD	Lowest Distribution
MoH	Ministry of Health
MoU	Memorandum of Understanding
NGO	Non-Governmental Organisation
NID	National Immunization Days
PoC	Protection of Civilian
PQS	Product Quality Standard
SDD	Solar Direct Drive
SOP	Standard Operating Procedures
SP	Service Point
SS	South Sudan
UNICEF	United Nations Children Funds
WHO	World Health Organization

1. APPLICANT INFORMATION

Country	***The REPULIC OF SOUTH SUDAN***
Date	***19/08/2016***
Contact name	***DR. ANTHONY LAKU***
Email address	*lkirbak@yahoo.com*
Phone number	***+211 955557246, +211 927349634***
Total funding requested from CCE optimisation platform (US $)	*This should correspond exactly to the budget requested in the embedded template.*
Does your country have an approved Gavi HSS support on-going?	Yes ☑ No ☐ *Indicate the anticipated **final year** of the HSS:**2017***
Proposed CCE optimisation platform support start date:	*Indicate the month and year of the planned start date of the support, based on the strategic deployment plan: **26/06/2017***
Proposed CCE optimisation platform support end date:	*Indicate the month and year of the planned end date of the support, based on the strategic deployment plan:**31/12/2021***
Signatures *Include signed (and official) CCE optimisation platform application endorsement by:* *a) Minister of Health and Minister of Finance (or delegated authorities)* *b) Members of the HSCC/ICC or equivalent committee and signed minutes of meetings where the application was endorsed* *In case of HSS and CCE optimisation platform requests, minutes must reflect that both were discussed and endorsed.*	*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: Signature: Date: **Minister of Finance (or delegated authority)** Name: Signature: Date:

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

*Please provide an outline of the following national strategies, country plans and documents with regards to how they are relevant to the country's supply chain, and how they have informed the requested 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 **All documents are mandatory. Only complete applications will be assessed.*	Attached Yes/No	Final version (dated)	Duration	Relevance	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	2012	5years		
4	Cmyp	Yes	2012	5years		
5	EVM Assessment	Yes				
6	EVM IP	Yes	April 2016			
7	EVM Annual Work plan and Progress Report[1]	Yes	April 2016			
8	CCE inventory[2], Facilities segmentation, and functionalities	Yes	2012			
9	Cold chain equipment inventory report	Yes	Feb 2016			
10	Facilities segmentation plan	Yes				
11	Cold chain rehabilitation and expansion plan, equipment selection and strategic deployment plan	Yes				
12	Maintenance plan with financing	Yes				
13	National M&E plan	Yes				
14	Proof of status for CCE tariff exemptions waiver	Yes				
15	OTHERS					

16. How do the above strategies, plans and documents inform the CCE optimisation platform support ('initial support' and 'scale-up support') requested? Countries are encouraged to reference relevant sections of the above documents as much as possible.
Provide approximately 1 page

In South Sudan immunization supply chain structure consists of the national, state, county and service levels. Supplies flow from the national vaccine store to state stores from where they proceed to counties and subsequently to health centres that

[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.

provide the service. The health centres comprise primary health care centres/units, hospitals and private/NGO clinics. However, due to security and logistics challenges some counties receive supplies directly from the national level.

The EPI unit which is mandated with implementing South Sudan immunization programme is under the national Ministry of Health. It is headed by director in charge of EPI and child health at national level. Lack of adequate manpower necessitates restructuring of EPI directorate to limited offices to administer it. The director is supported by a logistician, training officer, SIA officer and surveillance and information officer at national level. There are also cold chain technicians and data officers who look after equipment and supplies respectively. State level EPI activities are headed by state EPI managers while county level EPI is run by county EPI coordinators and supported by cold chain technicians. All health facilities have persons assigned as officer in charge who looks after all health matters including EPI[3].

The programme is currently managing 6 antigens namely OPV, BCG, TT, IPV, Pentavalent and Measles targeting 9 vaccine preventable diseases. The country plans to introduce PCV, Rotavirus vaccine, HPV and MR between 2017 and 2020.

Immunization coverage in the country suffered a downward trend from 2011 to 2015. This is largely due to weak financial position of the country, inadequate human resource, lack of HSS support from 2013 up to third quarter of 2015, and internal conflict as well as inadequate cold chain and logistics materials to cover areas that are difficult to reach especially during the rainy season.

Cold chain equipment inventory was conducted in 2012 and updated in 2015 and 2016. All cold chain equipment purchase is done through UNICEF except in few cases where NGOs provided domestic and absorption refrigerators in health facilities they managed. 96% of cold chain equipment in the country is of PQS/PIS standard with about 194 refrigerators among them being absorption type. As at the comprehensive 2012 63.3% of the equipment is working[4]. Inventory equipment replacement and expansion plan has been prepared covering the following priority areas:

i. Provision of CCEs to 32 county stores (LD) and 450 health facilities (SP) without equipment
ii. Replacement of CCEs at 14 counties where equipment are vandalized as a result of conflict in the country.
iii. Replacement of 194 absorption refrigerators that are not working due to energy and spare parts issues
iv. Replacement of 246 solar fridges of battery type that are either obsolete or those whose supply of spare parts especially replacement of batteries are becoming a programme concern. 25% of the solar fridges of the battery type are part of the vandalised equipment for health facilities in conflict states.
v. Provision of SDD refrigerators to counties completely without electricity due lack of national grid supply in the country and unavailability of fuel to run generators.
vi. Provide 83 iceliners to states that will experience capacity shortfall in preparation for introduction of new vaccines.
vii. Provision of 100 long term passive devices for isolated communities with small populations that have depended on cold boxes with frequent icepacks replacement and where services have been completely absent where outreach strategy are not considered effective.

In terms of energy to operate CCEs in the country, the system continuously incurs huge costs to provide fuel to run generators at all levels of the supply chain. Similarly, lack of gas, kerosene and spare parts to run absorption refrigerators makes cold chain maintenance much more difficult in the country. Therefore SDD equipment proposed in the rehabilitation and expansion plan will go a long way in providing sustainable cold chain for vaccine storage in the country thereby reducing the cost of running the system.

Due to continued increase in demand for immunization service delivery as a result of population growth and community awareness, there is corresponding rise in demand for cold chain equipment that will provide storage capacity for increasing vaccine volume at all level of the supply chain. Cold chain expansion and rehabilitation therefore will enable the immunization supply chain system in the country to cope with volume of vaccines needed to be stored without unnecessary stock out. Furthermore with plan for introduction of new vaccines, improved (expanded and rehabilitated) cold chain system will enable the supply chain system to meet its target on storage and distribution of vaccines as well as replacement of obsolete equipment.

[3] South Sudan cMYP 2012 - 2016

[4] Cold chain inventory validation report 2016

On the other hand internal conflict in South Sudan has resulted to many equipment vandalized and destroyed which adds to the constraints of the supply chain system in the country making it more difficult to reach large population with potent vaccines in good time. If this plan for replacement and expansion is implemented, the supply chain system will bounce back and reach more underserved areas with potent vaccines that will result to more coverage.

Another major bottleneck currently hindering the effectiveness of immunization supply chain system in south Sudan, is the issue of non-availability of cold chain equipment in many areas which necessitates frequently organising costly chattered flights to supply vaccines for short period to remote counties and health centres in cold boxes directly from the national level and in many instances these flights are cancelled due to security or weather issues. However, if cold chain equipment is provided to these areas the system will strategize to keep vaccines for reasonable period that ensures uninterrupted service delivery in those areas.

All areas identified for provision or replacement of CCEs will be reviewed before the arrival of the equipment ordered to ensure that those facilities are ready in terms of quality of physical structures, trained personnel and general security situation. This is to ensure deployment of CCEs to areas that they will be optimally put to use.

Preventive maintenance of cold chain equipment in the country is currently coordinated by technicians recruited by the national Ministry of Health with the support of UNICEF and Gavi using the HSS fund to coach and provide hand-on support to the central, state and county levels cold chain technicians[5]. Furthermore, the country has acquired support from CDC and Gavi to recruit 11 additional cold chain technicians (one per state and additional one at national level) to further strengthen the repairs and maintenance team. Capacity building plan for the eleven cold chain technicians is being developed to prepare them for the tasks. TORs for the recruitment have already been developed and the national ministry of health is handling the recruitment procedures with UNICEF providing technical guidance. UNICEF is fully responsible for management of national vaccine store in the country.

In South Sudan there is Memorandum of Understanding (MoU) signed between government and UNICEF exempting all supplies and equipment for programme assistance coming to the country through UNICEF from tariff and taxes[6]. This provision is contained in section 6 of Article VII on page 5 of the MoU attached as mandatory attachment #11

The country has an existing Gavi HSS support that will last between 2016 and 2017. Funds allocated for cold chain equipment support will be used to form part of country's counterpart contribution while other donors are being contacted to support with the remaining funds required to make up the total counterpart funds. If the application is approved for the country the national ministry of health will meet all requirements to facilitate remittance of the funds to UNICEF-SD that will handle the procurement of the equipment.

CMYP strategies and plans for South Sudan that feed into CCEOP

Programme objective include to;

- Increase and sustain Pentavalent3 national coverage at 90% and 80% coverage for 80% of the counties by the year 2021.
- Reduce dropout to acceptable levels of less 10%.
- Reduce incidence of measles
- Reduce morbidity and mortality due to diarrhoea and pneumonia; and to mitigate the risk of cervical cancer, meningitis
- Sustain and maintain WHO-certification of WPV polio-free status by 2020
- To establish a Logistics Management Information System (LMIS) in all states by 2020
- Establish a national preventive and corrective cold chain maintenance system for EPI
- Effective and efficient storage and distribution system for EPI vaccines and supplies by 2020
- To increase vaccine and Immunization supplies utilization monitoring in all (100%) counties by 2020

[5] Cold chain equipment maintenance plan 2016

[6] MoU signed between GOSS and UNICEF

The strategies set in the CMYP include;

- Strengthen delivery of outreaches to reach every child
- Accelerated Routine Immunization Activities (ARIAs
- Drop out monitoring
- Introduce MCV2 dose
- Introduction of new vaccines (PCV, Rotavirus vaccine, HPV,
- Achieve and maintain high routine immunization coverage for OPV3
- Conduct supplemental immunization activities
- Establish an effective and efficient logistics management information system.
- Conduct Quarterly preventive and corrective maintenance of the cold chain system
- Develop and implement a cold chain replacement and expansion plan.
- Create a reliable routine vaccines and supplies distribution system at all levels

All activities that would ensure realisation of the above strategies to meet the objectives highly depend on building of a reliable cold chain system that CCEOP would contribute to.

Recommendations from the EVMA and the essence of the cold chain rehabilitation and expansion plan all target improved cold chain both equipment and its management as the focus for attaining EPI programme goals.

3. APPLICATION DETAILS

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 plus)*** to address additional CCE needs as part of transforming the supply chain to support sustainable achievements of coverage and equity targets.

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- Countries must make **a single application** to the CCE optimisation platform, requesting support for both the 'initial' and 'scale-up' phases.
- This single application may request urgent and additional CCE needs for a maximum period of 5 years. Countries are strongly encouraged to plan, implement and scale-up other supply chain fundamentals activities (see Section 3)
- If the application is recommended for approval by the IRC, **the amount recommend will be a maximum investment amount** for the period of platform support.
- Yearly investment amounts (up to the approved maximum investment amount) and indicative number of supported equipment may change based on new evidence generated during implementing the initial support (e.g. new system design or improved equipment available).

3.A) The 'initial support' *(Approximately years 1-2)*

This initial support is designed to address identified (and urgent) peripheral facilities CCE and supply chain needs, catalyse progress on all supply chain fundamentals and facilitate full scale-up of transformed supply chain aligned to sustainable coverage and equity goals.

Country application should demonstrate how the activities to be implemented during the 'initial support' phase will **address urgent CCE needs** and **contribute to achieving immunisation coverage and equity goals**. The rationale provided must reflect **prioritisation to fill CCE gaps.** It may also include, amongst other elements, identified (and specified) hard to reach or marginalised populations, or sites with no and/or irreparable CCE.

Important information *section 3.A*

- CCE rehabilitation and expansion activities are not stand-alone measures to transform the supply chain. Therefore countries **are strongly encouraged to demonstrate the planning or implementation of activities related to other supply chain fundamentals during the 'initial support' phase** e.g. leadership, continuous improvement plans, data for management and system design (see Section 3.1).
- Requested CCE optimisation platform support should **demonstrate complementarity with national strategies, documents** (see details in Section 2 of the *application form*) and on-going or planned **activities related to other supply chain fundamental**.
- Countries are strongly encouraged to demonstrate funding (and implementation status) of planned and/or on-going activities related to other supply chain fundamentals.
- Countries must **present a plan to monitor, collect and analyse temperature recording information in all CCE,** in order to assess vaccine potency. At a minimum, these should be via 30 Day Temperature Recorders (DTR). Options for remote monitoring should be considered as the technologies become available.

3.B) Initial support activities –Evaluating implementation

Provision of support for year 3 onwards will be **contingent on an evaluation** of the activities implemented during the initial support phase. The evaluation will:

Important information *section 3.B*

- Take place **during the Joint Appraisal process**;
- Involve an **evaluation of activities implementation to address urgent CCE expansion and rehabilitation needs,** and their **contribution to vaccine availability, potency, efficiency as well as achievement of coverage and equity improvements**;
- **Include an overview of how initial support activities have strengthened synergies across all supply chain fundamentals-** leadership, continuous improvement, data for management and system design;
- Assess the **monitoring, collection and analysis of temperature data from all CCE**.

3.C) The 'scale-up support' *(Approximately year 3 and beyond)*

The 'scale-up support' is designed to address additional CCE needs, catalyse progress on other supply chain fundamentals and configure the supply chain to achieve sustainable coverage and equity goals.

Request for the scale-up support (as part of the single platform application) should demonstrate how planned activities will:

- Address additional CCE needs;
- Create synergies with on-going and or planned activities under other supply chain fundamentals (see Section 3 of *Application Instructions*);
- Achieve immunisation coverage and equity goals.

Important information *section 3.C*

- **Yearly request for approval for the scale-up support** (year 3 onwards) will go to the **Gavi High Level Review Panel (HLRP)** that will take a decision based on the fulfilment of agreed financial, programmatic and implementation obligations and progress.
- Countries are strongly encouraged to **implement other supply chain fundamental activities during the scale-up support phase**.
- Other **planned supply chain fundamental activities will not be funded by the CCE optimisation platform**.
- Requested **CCE optimisation platform support** should demonstrate complementarity with national strategies, documents (see details in Section 2 of the *application form*) and on-going or planned **supply chain fundamental activities**.
- Countries are strongly encouraged to demonstrate funding (and implementation status) of on-going and or planned supply chain fundamental activities.

4. APPLICATION REQUEST

This section gives an overview of the information the IRC will expect from country in the 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)

Situation analysis of country's Supply chain *Provide 1 page*	- *How is the country's immunisation supply chain administered?* - *What bottlenecks have been identified in the country's supply chain?* - *Through what interventions are these being addressed?* - *What challenges are hindering the implementation of these interventions?* - *How will the CCE optimisation platform support assist in mitigating these challenges?* ***South Sudan Immunization Supply Chain*** In South Sudan immunization supply chain structure consists of the national, state, county and service levels. The EPI unit of Ministry of Health is mandated with implementing South Sudan immunization programme at the national level. It is headed by director in charge of EPI and child health at national level. The director is supported by a logistician, training officer, SIA officer and surveillance and information officer at national level. There are also cold chain technicians and data officers who look after equipment and supplies respectively. State level EPI activities are headed by state EPI managers while county level EPI is run by county EPI coordinators and supported by cold chain technicians. All health facilities have persons assigned as officer in charge who looks after all health matters including EPI.

The EPI programme is currently managing 6 antigens namely OPV, BCG, TT, IPV, Pentavalent and Measles targeting 9 vaccine preventable diseases. The country plans to introduce PCV, Rotavirus vaccine, HPV and MR between 2017 and 2020. Under the leadership of the EPI unit, MOH, several partners/actors are involved in the immunization supply chain. Vaccines and supplies used in both routine and SIAs are forecasted jointly at national level, procured, stored (national vaccine store) and distributed to the states) by UNICEF by road and air. The distribution of vaccines and supplies is conducted using combination of both push and pull methods every quarter for states and on monthly basis for counties. Similarly, State MOH and partners support the delivery of vaccines from states to counties and health facilities.

Supply chain challenges and weaknesses

Being a new country emerging from war having suffered breakdown in the health, nutrition and immunization systems, and the immunization coverage in South Sudan is very low. Immunization supply chain also suffers from number of drawbacks.

Major weaknesses of EPI system in South Sudan include: inadequacy of skilled personnel to run the supply and cold chain equipment management systems and high turnover of existing ones, weak information system and lack of reliable data in the system for informing decisions, security challenges and failure to reach all areas with potent vaccines, lack of financial resource for the system to operate effectively and efficiently and weak transport logistics due to lack of access to many areas as a result of security issues, and sustained risk equipment vandalism and destruction

Other challenges of the system include:

- Security issues that caused destruction of cold chain equipment in conflict areas and has hindered access for service delivery.
- High logistic and operational costs of delivering of vaccines and supplies to hard-to- reach areas without cold chain equipment due to lack of access by road which necessitates use of chartered flights.
- High cost of fuel (diesel, gas kerosene etc) and logistics for its distribution to locations where cold chain equipment are located.
- Lack of CCE in 32 out of 80 counties
- High cost of transportation and other services for organizing vaccine management related activities including trainings and supervision

The above listed challenges make CCEs performance below optimum due inability of the system to monitor them and their managers; similarly deployment of technicians for repairs and maintenance of CCEs is adversely affected.

Interventions made to alleviate challenges

In effort to sustain immunization services whilst the continued fragility of immunization supply chain system in South Sudan, successive effort are made and are still underway.

In South Sudan, UN agencies and development partners play crucial role in delivering vaccines to the service delivery points and/or by actually provision of immunization services. With this in mind, standing national EPI TWG under the leadership of the EPI unit of MOH has been established and is meeting regularly to deliberate on ongoing opportunities and challenges so as to collaborate, coordinate, and commit towards these ends.

To improve impact, key supply chain functions have been given to these partners as per their organizational affiliations -

UNICEF South Sudan has been shouldering the responsibility of national vaccine stores and immunization supplies distribution to the states. To minimize risks during transportation and to

ensure vaccine reach to their intended destinations, UNICEF has been using UNHASS flights (chattered sometimes) for delivering vaccines – thus maximizing the use of available and reliable transport options. In 2015, UNICEF has conducted the procurement, distribution and installation of 96 CCEs (55 SDD refrigerators, 25 on-grid freezers and 16 on-grid icelined refrigerators). During this period, inadequacy of existing technicians and shortage of funds to support movement of existing ones presented additional challenges for conducting the installation. However, with recruitment of private technicians by UNICEF to provide on-demand installation service, all the equipment were installed.

UNICEF currently is supporting the design of national vaccine store and conducting maintenance and repair of CCEs throughout the country.

In effort to strengthen the immunization supply chain system, UNICEF has actively supported the development of training materials and SOPs for cold chain management. Together with CDC, UNICEF is facilitating the recruitment and training of additional cold chain technicians while the recruitment of national cold chain logistics advisor fore-sought to hasten ongoing efforts has been completed.

Lessons learnt from previous exercise

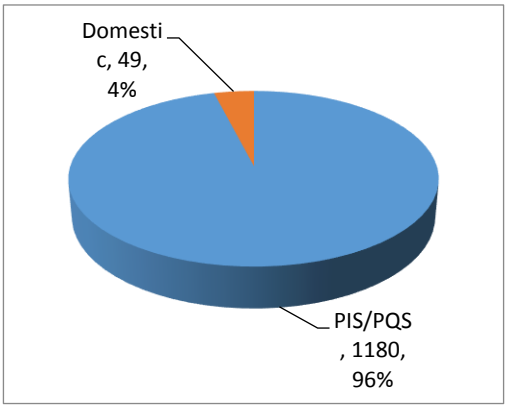
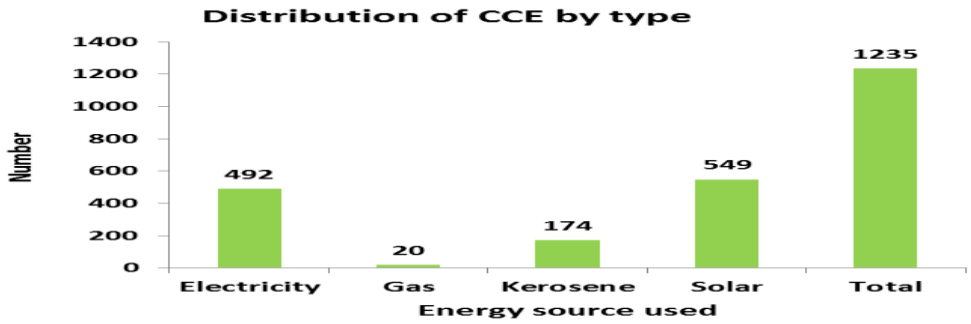
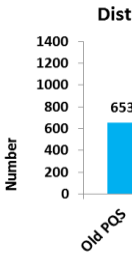
Valuable lessons were learned from the ongoing dialogues and real time interventions made to sustain the immunization supply chain.

1. Continued fragility of the context with in which the immunization supply chain is run requires cautious planning and vigilance during operation. This, at the same time, should not serve as pretext for compromise in running the system. The decision to use UNHAS for vaccines and related supplies distribution despite the high cost and complexity of the system is a good lessons
2. Maintaining strong communication link and fostering collaboration with implementing partners at all levels of the ISC system remains critical
3. The use of independent/private service providers (as has been seen for installation of CCEs) should be appraised and utilized; mechanisms appropriate for knowledge transfer will be devised.

Benefit of the Cold Chain Equipment Platform support

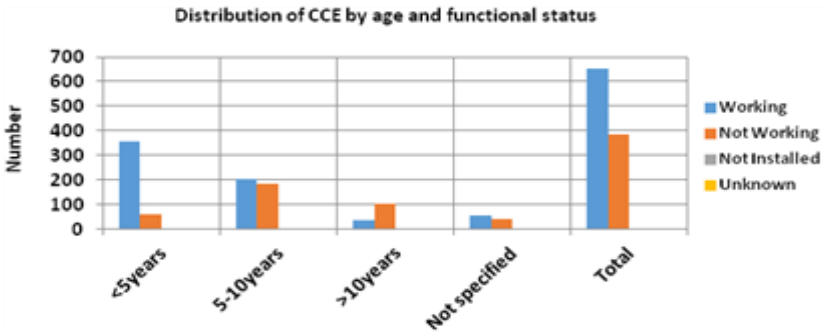
Currently, there is inadequacy and uneven spread of cold chain equipment across the supply chain levels in the country which is a hindrance to equitable immunization service. This is because children and women living in areas without equipment are not reached with immunization service due to lack of equipment to store vaccines. Furthermore difficulties in logistics for frequent outreach service make access to immunization service very low which in turn affects immunization coverage. Cumulative immunization coverage therefore remain low due lack of equitable and wider reach especially to communities living in far and hard to reach areas. However, if immunization service delivery is expanded to more of the existing health facilities and the newly constructed ones by providing them with suitable cold chain equipment, there will be corresponding rise in coverage as more children and women will be reached. Similarly replacement of obsolete equipment will strengthen the immunization supply chain system to accommodate new vaccines and will facilitate equity in provision of protection to children and women against vaccine preventable diseases.

Furthermore, acquisition, deployment and management of cold chain equipment in greater number and quality will reduce temperature excursion and damage to vaccines which is a challenge not only for potency and availability of vaccines, but also for efficiency of the supply chain and its ability to reach more children and women.

	Cold chain optimization initiative therefore, if implemented in South Sudan will go a long way in ensuring reliable cold chain system with improved storage and distribution mechanisms for vaccines across the country's immunization supply chain system which in turn result to higher vaccinations coverage.
Situation analysis of country's CCE (number, distribution, functionalities and *gaps*) **and supply chain)** *Provide 1 page*	- *Until today, what impact has CCE had on the country's supply chain successful functioning?* - *What is the most recent understanding around CCE availability, number, utilisation and functionalities?* - *What are the bottlenecks (for example, capacity and technology constraints) that CCE can address in the current supply chain set-up?* ***What Impact has CCE had on the country's supply chain*** Even if the full scale benefit of deploying CCE with improved performance is yet to be realized, notable impact has been registered. There is an improved cold chain storage capacity at states, counties and facilities through deployment of new and improved cold chain equipment. ***Existing situation of CCE in the country*** Cold chain equipment inventory was conducted in 2012 and updated in 2015 and 2016. All procurement of cold chain equipment is done through UNICEF except in few cases where NGO provide domestic and absorption refrigerators in health facilities they managed. 96% of cold chain equipment in the country is of PQS/PIS standard with about 194 refrigerators among them being absorption type[7]. Equipment run with solar energy accounts for about 45%. Further analysis of CCE inventory data[8] is shown in the figures below:    In terms of equipment working status CCE in the country, equipment working status in direct relation with their age as higher proportion of non-working equipment is found among older ones. Larger proportion of non-working equipment is found in those greater than 10 years while less proportion is among those less than five years after installation. Similarly, from the country equipment inventory validated in March 2016, number of equipment in working status is 781 (63.3%) while 450 (34.8%) are not working. Most of the non-working equipment are those older than 10 years (obsolete) and absorption refrigerators due to lack of energy and spare parts. The trend of

[7] SS Cold Chain Equipment Management (CCEM) tool 2016

[8] Source: SS CC Inventory Management Tool (IMT) 2016

	equipment functionality among the those whose year of installation is confirmed is summarized in the chart below:  There are six cold rooms at the national vaccine store that are used for storage of vaccines. Although this equipment is still functional three among them were received as second-tier having been used before their re-installation in Juba. There is also one obsolete and non CFC-free freezer room used for storage of OPV which requires urgent replacement. ***What bottlenecks can be addressed:*** Implementation of CCEO in South Sudan addresses several challenges in the current immunization supply chain: • Currently, 46 of the 80 counties and 550 health facilities in South Sudan lack cold chain equipment. Provision of equipment to these targets would significantly enhance immunization services, improves coverage and addresses/minimizes disparities in access and improves equity for immunization service in the nation. • The cost of keeping up and running the aged equipment compared to their utility is very high. Frequent failure and need for maintenance, high cost of kerosene/electricity, shortage of spare parts, added to shortage of trained technicians and fragile security situation has been immediate and pressing challenge in the country's immunization supply chain. Replacement of non-PQS and older equipment would also minimize their adverse impact on vaccine potency and environment. Solar powered refrigerators would contribute.
Situation analysis around urgent or scale-up CCE (number, distribution, functionalities etc.) **and other supply chain fundamentals needs.** (leadership, planning, system design and data systems) **Do state the beneficiary populations for the support requested** (location,	*Which of the above CCE needs are urgent and why?* - *What are the additional CCE needs to be addressed during the scale-up phase?* - *What are the details of these CCE needs (i.e. type of equipment, model, capacity, number etc.)?* - *How will the phased support contribute to country's immunisation and CCE coverage goals and increase equitable access to immunisation services (for example, ensuring cross-linkages to HSS, coverage and equity, M&E and cMYP)?* - *Are characteristics of beneficiary populations clearly identified (e.g. size, demographics, socio-economic characteristics etc.)?* - *How will the support ensure that other aspects of maintaining the cold chain e.g. preventive and corrective maintenance and monitoring and evaluation are addressed for these equipment?* - *How will the support catalyse investment in other supply chain fundamentals i.e. Immunisation Leadership, Planning, Data systems, System design?* **Cold chain needs and prioritization of targets:** There are 80 counties in the country's immunization supply chain which act as lowest distribution level. Currently 34 of the counties have storage facilities while the other 46 do not. Among the 46 counties without equipment, 14 of them have cold chain equipment vandalized in the course of fighting that broke out in the country. The 46 counties are populated by about 6,392,829 people

population size, demographic distribution etc.)

Provide 2 pages

with about 255,744 target children under one year and about 319,643 pregnant women. Requirement for both counties with and without storage facilities is analysed with appropriate recommendation over time giving priority to the counties without equipment.

The equipment sought as a priority from the CCEOP is for equitable distribution but targeting as a priority 3/10 conflict states and 80% of non-functioning equipment due to breakage or lack fuel. This will target 40% of the birth cohort.

This project addresses: provision of new CCE to counties; provision of new refrigerators to 450 health facilities; provision of passive devices to 100 health facilities; replacement of 194 absorption type refrigerators; replacement of 246 solar powered refrigerators with battery; provision of iceliners to states to upgrade existing cold chain storage capacity.

The CCEO operation therefore is organized intensive initial phase and subsequent scale-ups.

Initial phase:

- Stable and accessible, lacking CC facility: Provision of CCEs to counties and health facilities lacking cold chain facilities with appropriate infrastructure and trained health workers that are accessible for distribution, installation and commissioning.
- Lacking CC facility, in formally conflict affected that has registered improved security, infrastructure repaired and health workers back to their duty stations that are accessible for distribution, installation and commissioning
- Lacking CC facility, in conflict affected area with higher population and potentially accessible: Provision of CCEs to counties and health facilities lacking cold chain facilities residing in conflict affected areas, but having high population density and potential accessibility as security improve, infrastructure repaired and partners and staff resume routine activities.
- Stable and accessible, replacement of obsolete, absorption and solar powered refrigerators with battery: replacement of obsolete CCEs for counties and health facilities accessible for distribution, installation and commissioning

Scale-up phase:

- Lacking CC facility, in conflict affected area; but low population density and difficult to access: provision of CCEs to counties and health facilities lacking cold chain facilities residing in conflict affected areas, but that has low population density and are difficult to access without special security arrangement.
- Conflict affected and difficult to access: replacement of aged, absorption type refrigerators/freezers, and other non-PQS CCEs for counties and health facilities residing in conflict affected areas and are difficult to access without special security arrangement.
- Stable and accessible facilities lacking equipment where infrastructure is improved staff trained and deployed.

Table showing the equipment procurement and distribution timeline.

		Initial phase		Scale up			
Type of equipment	**Equipment Model**	**2017**	**2018**	**2019**	**2020**	**2021**	**Total**
Off-grid/SDD refrigerators (with freezer comp.)	TCW 2043SDD	30	20	10	10		**70**
Off-grid/SDD refrigerators (without freezer comp.)	TCW 3043	30	20	10	10		**70**

Off-grid/SDD refrigerators (with freezer comp.)	TCW 40SDD	200	250	200	150	100	**900**
On-grid ice-lined refrigerator (ILR) (without freezer comp.)	VLS 400A Green Line	8	42	20	7	6	**83**
Long Term Passive Devices	Arktek-YBC-5	40	40	10	10		**100**
Temperature Monitoring Devices including 30-day loggers and/or remote technologies (for existing equipment)		270	330	260	180	110	**1150**
Spare parts (for existing platform-eligible equipment)		26	31	24	24	16	**121**

As highlighted in the bottlenecks, standalone SDD will offset the complications that arise from limited travel due to seasonal roads affected by weather, the passive equipment will enhance outreach programmes where there are constraints of infrastructure and sparsely populated communities. The supply of SDD will offset the constraints associated with lack of fuel for kerosene operated fridges thermos-generators.
The distribution plan is contained in the attached rehabilitation and expansion plan.

As a new country facing ongoing security challenges, the immunization supply chain still faces many challenges. National and state MOH, and UNICEF oversee the allocation, distribution, installation and maintenance of cold chain equipment in South Sudan. Currently, CCE request, allocation, and delivery involves:

- Identification of health facility equipment needs and producing request to State MOH
- State MOH reviews and forwards the request to National EPI unit at MOH
- National EPI Director reviews and approves requests; forwards approved request to UNICEF for implementation.
- Based on approved requests, UNICEF identifies feasible transport options (air, road, boat, etc) and delivers the equipment to states/service delivery points.
    - Installation of equipment shall be sought from the supplier primarily through bundled service contract agreement.
- Conduct ongoing maintenance. The partners working at health facilities are primarily responsible for equipment follow-up and alert UNICEF for maintenance needs or for any other concern. UNICEF will then send technicians to sites and addresses the concern.

Using such arrangement, 632 refrigerators/freezers, 1022 cold boxes, and 8732 vaccine carriers have been distributed between 2012 and 2016.

Currently the MOH does not have designated equipment maintenance department and depends on support agencies and partners. Preventive maintenance is mainly coordinated by MOH technicians hired with the support of UNICEF and GAVI. There is also an experience of using independent private technicians to handle installation and equipment activities. Even so, significant gap exists. To bridge this, the recruitment of 11 additional cold chain technicians (1 for national and the remaining 10 for all 10 states), with the support of UNICEF and GAVI, is underway. CDC has supported MOH with two technicians in increasing the capacity for maintenance. The recruitment of immunization supply chain advisor to MOH has been concluded. Capacity building plan for the technicians has already been developed, which when fully deployed are expected to revamp the preventive and curative maintenance for the equipment deployed.

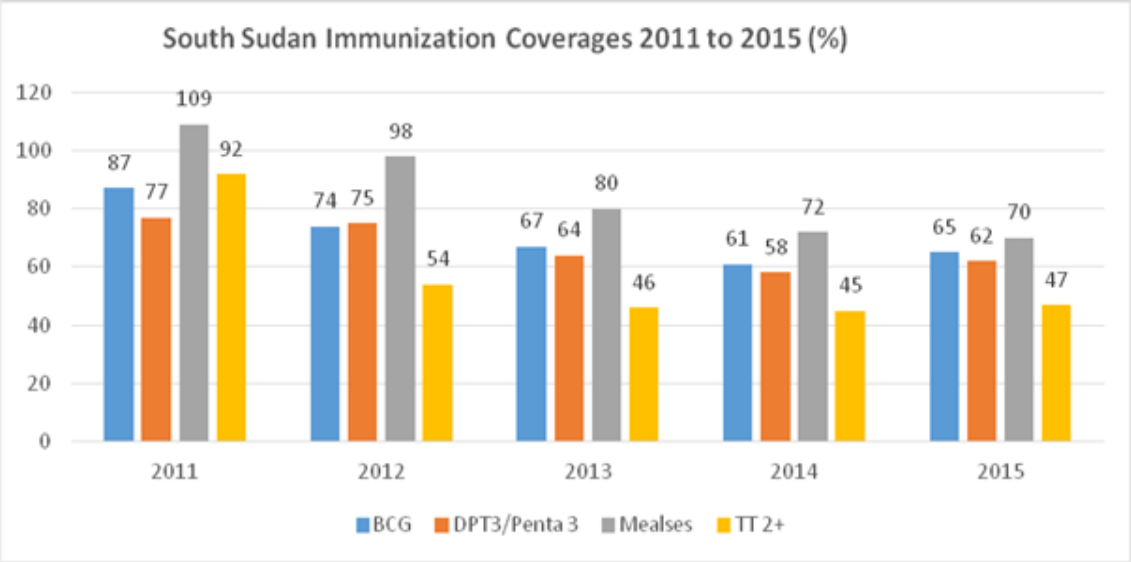
Complementarity of CCE optimisation platform requested support with other Gavi (and partners) support?	- *What on-going or recently completed supply chain related support does the country receive (e.g. Gavi HSS and or from other partners)?* - *How will the requested CCE optimisation platform support complement these investments?* - *How (and through what activities) will proposed CCE optimisation platform investments and on-going supply chain-related activities (such as Gavi HSS and or from other partners) complementarily address immunisation gaps identified in country cMYP?* - *Are identified populations with equity or gender barrier needs clearly identified and prioritised for requested CCE optimisation platform support?* - *How do the lessons learnt from recently implemented supply-chain related support inform requested CCE optimisation platform support?* South Sudan currently has a five year HSS plan for 2012 to 2016 that is carried over to 2017. The country is planning to use the cold chain component of the plan as a contribution to counterpart funds required for the CCEOP platform support. The national vaccine store in the country is managed by UNICEF including vaccine distribution. UNICEF is also shouldering the responsibilities of supplying and distributing fuel for cold chain management in the country. UNICEF also pays all support staff that work at the national store including a national cold chin consultant. UNICEF is providing technical support in recruitment of cold chain technicians with support from CDC. UNICEF is supporting design of new national vaccine store after which it will facilitate fund raising for construction. Vaccine management standard operating procedures SOPs, cold chain training materials and cold equipment management guideline have been developed with support from UNICEF and printing of the documents is going on. In efforts to strengthen cold chain system in the country, government of South Sudan (GOSS) through the national ministry of health in collaboration with UNICEF and GAVI have worked together to purchase, install and maintain a sizable number of cold chain equipment. In 2015, 94 units of Solar Direct Drive (SDD) refrigerators were purchased, distributed and installed in 66 facilities. UNICEF supported installation of the equipment and training of cold chain technicians on installation and maintenance[9]. UNICEF and Gavi remain the major actors in providing support for cold chain management in South Sudan. If the application for this support is approved, resources from these agencies can be redirected to other areas such as vaccine distribution, fuelling of generators, training of cold chain managers and technicians etc since the government of South Sudan is not yet ready to take over full responsibilities due to serious financial crunch in the country. Furthermore the platform support will provide means for training of newly recruited cold chain technicians through the service bundle agreement. It will also reduce the burden of fuel and spare parts for absorption refrigerators in the country.
Requested support coverage, equity and sustainability goals? *Provide 1 page*	- *What are the current immunisation coverage rates in country and sub-country (e.g. districts, zones and provinces)?* - *What are the identified geographic, socio-economic inequities in immunisation coverage in the country/districts/zones/provinces?* - *Are there identified gender barriers to immunisation delivery in the country/districts/zones/provinces?* - *How will the requested platform support contribute to addressing identified geographic, socio-economic inequities and gender barriers to immunisation delivery?* - *How will the country sustainably invest in CCE in the post-CCE optimisation platform support period?* **Immunization Coverage** Immunization program in South Sudan has been in existence since when the country became fully

[9] Cold Chain inventory validation report 2016

autonomous. The country currently manages six antigens namely BCG, TT, Measles, Pentavalent (introduced in 2014), OPV and IPV (introduced in 2015) in the routine schedule for children under one year and women. Immunization coverage in the country suffer a downward trend from 2011 to 2015. This is due to the following major reasons:

1. Weak financial position of the country being new and with many challenges
2. Lack of HSS support from 2013 up to third quarter of 2015
3. Conflict that broke in the country which makes access to immunization service as well as service delivery difficult and even impossible in many areas.
4. Inadequate cold chain and logistics materials to cover areas that are difficult to reach especially during the rainy season
5. Inadequate human resources for cold chain management

The above major factors made it difficult for the country to provide adequate cold chain equipment and logistics requirements for immunization activities including outreach service. Therefore immunization coverage in the country remain in a downward trend from 2011 to 2015[10] as shown in the diagram below:



However, it is hoped that with new peace initiative in the country and attainment of Gavi HSS support to be fully implemented from third quarter of 2016 to 2017, immunization activities are expected to pick up with resultant increase in demand for service and number of service delivery facilities. This is in turn will require deployment of more cold chain equipment and training of more personnel in vaccine management.

Therefore cold chain equipment optimization platform will go a long way in assisting the country to meet the expected need for cold chain expansion and replacement which in turn give room for wider geographical reach and subsequent improvement in vaccination coverage. Furthermore with additional equipment deployed to rural and hard to reach areas, more communities will have access to vaccination due to availability of vaccines in their settlements. This will result to more children and women being vaccinated which will increase coverage and reduce equity gap as follows:

i. ***Provision of storage facilities to county/district stores and service delivery facilities***

[10] SS routine immunization report 2015

without cold chain equipment; provision of SDD refrigerators to counties without electricity (due to lack of national grid supply and/or unavailability of fuel for generators).

Currently 32 out the 80 counties (districts) in the country have no cold chain equipment for vaccine storage and a large number of service delivery facilities. Similarly, inter-county transportation link which is unusable due to terrain especially during the rainy and fragile security situation provide no easy alternative to reaching these districts with vaccines. In many instances vaccines are sent using cold boxes from the national vaccine store via chattered and/or humanitarian flights which are sometimes cancelled due to weather or security challenges. Due to hold over time of cold boxes and limited availability of transportation means vaccine distribution becomes difficult and near impossible to these areas. In many instances temperature excursions occur during transport thereby compromising potency of the vaccines. The resultant effect of this situation is inequity in immunization service delivery for the affected areas. This new expansion of cold chain facility to county stores and health facilities will provide additional platform to reach 25% of eligible target population available in SS.

ii. ***Re-equipping vandalized facilities***

Ongoing sporadic conflict dealt significant blow to cold chain infrastructure on the ground. CCEs in 14 counties and HFs have been vandalized as a result significantly compromising grass root immunization activities. Through the CCEOP, the plan shall thus be to re-equip them with sufficient and appropriate CCE for storing, handling and transporting vaccines. This intervention shall contribute to the effort of reaching additional population with safe and potent vaccines.

iii. ***Extension of Immunization service delivery to more communities****:*

Due to population growth and its subsequent effect on demand for immunization service, government of South Sudan is opening new health centres across the length and breadth of the country. The government of South Sudan in collaboration with UNICEF and WHO is coordinating partners working on the ground that could potentially engage in immunization activities (advocacy and community mobilization activities, vaccination, training, supervision, etc). As much effort is underway to reach under privileged communities that are affected by conflict, displaced, living in hard to reach and areas lacking power supply for running cold chain facilities.

With this development, cold chain equipment expansion becomes necessary in order to provide potent vaccines for immunization service delivery in those areas where new facilities have been established.

iv. ***Introduction of new vaccines and other supplemental activities*****:**

With the planned introduction new vaccine, analysis of storage capacity requirement shows gap for storage capacity at all levels which require prompt intervention for successful implementation of the plan to introduce new and underutilized vaccines in the country. To facilitate the required intervention step by step analysis has been made in relation with time, new vaccines characteristics, available and required capacities with proposal for appropriate type of equipment to bridge the identified gap. Each level is considered and analysed using data from the cold chain equipment inventory base on usable storage capacity available from standard equipment. Furthermore, supplemental immunization activities such as polio, measles and TT campaigns exert further pressure to cold chain storage capacity in the country.

To successfully implement the planned introduction of new vaccines cold chain expansion is a necessary condition to be able to accommodate the vaccines by providing adequate

	storage equipment that ensures their potency. v. ***Equipment standard and life span:*** Although majority of cold chain equipment in the country are of PQS/PIS standard, there are still some as contained in the national cold chain inventory (attachment #6), that do not meet the standard. 14% of cold chain equipment in the country are more than 10 years while about 4% are non-PQS by standard. Since all WHO approved refrigerators and freezers used for vaccine storage have recommended life span of 10 years effective from their date of installation (except for cold rooms and freezer rooms that have maximum span of up to 15 years), any equipment that attained this age is considered obsolete by EVM standard irrespective of its functionality status. By this standard all obsolete and non PQS equipment will be removed from the cold chain inventory and replaced. vi. ***Replacement of absorption refrigerators:*** There are 194 (16%) refrigerators in the country cold chain system that is of absorption type. These equipment are difficult to manage due to lack of fuel (kerosene/gas) and spare parts; similarly cost of their spare parts, fuel (where available) and their logistics are increasing and becoming unsustainable by the meagre resources of the government and its' supporting partners in the country. Due to other competing demands there is immense pressure on the national budget and the contribution from partners. Cold chain optimization platform will be a very good window for the country to utilize to address the pressing need of the immunization supply chain system in the country. Similarly, the support will give government and it development partners liberty to address the need of other areas such as provision of cold rooms to national and states stores especially with the anticipated increase in number of states from ten (10) to twenty eight (28) in the country.
Provide a brief description of your maintenance plan and its source of funding? *Provide 1 page*	- *How does the country carry out preventive and corrective maintenance of installed CCE?* - *What are the proposed preventive and corrective maintenance strategies for requested CCE optimisation platform-supported CCE?* - *What are the proposed strategies to monitor scheduled preventive and corrective maintenance?* - *Which source(s) of funding will be used for maintenance, and to what extent are they assured?* CCE maintenance management system in South Sudan is underdeveloped. The MOH does not have designated equipment maintenance department and depends on support agencies and partners for all medical equipment installation and maintenance including cold chain equipment. The country does not have a developed private sector with technical capability to enable outsourcing cold chain equipment management. Recently, understanding this gap, progresses have been made with regard to deployment of qualified personnel and creation of system for managing maintenance. - Development of human resource: There are 3 technicians at national level looking after equipment and supporting state in the area of training and complex repairs. They serve as trainers to the states as well as supporting counties whenever the need arises. The country also uses private technicians that are always on ground to provide on-demand service such as installation and repairs. These private technicians serve as a strong back up to the country team for repair and maintenance of CCEs. With support of Gavi HSS, the MOH has recruited a technical advisor for immunisation supply chain management and is in process of recruiting a cold chain technician at national level. It is also in process of recruiting and training 10 cold chain technician to be stationed at 10 hubs to support installation and maintenance in respective state, counties and Health facilities and will be provided with tools and spare parts. The technicians will eventually be absorbed in the mainstream government workforce.

Once the technicians are on board, a group of skilled technicians will be hired to train the technicians in Juba through a comprehensive practical tailored training with basic theory pertaining to principles of cold chain equipment that include refrigeration, electricity and photovoltaics. An external consultant will be hired to oversee this training. Then the trainees will be deployed and will be followed by the identified skilled technicians for mentorship in the field.

Furthermore, the country has acquired support from CDC and GAVI to recruit 11 additional cold chain technicians (one per Hub state and additional one at national level) to further strengthen the repairs and maintenance team. Capacity building plan for the eleven cold chain technicians is being developed to prepare them for the tasks.

- *Procurement and management of spare parts:*

  UNICEF supports procurement of equipment and spare parts as well as storing them due to lack of functional maintenance system. Currently with support from UNICEF the country operate and maintain a good level of spare parts stock that are used for repairs and maintenance of CCEs. This trend will continue and the country will explore additional support to strengthen the existing efforts.

- *Conducting maintenance operation:*
  Preventive maintenance of cold chain equipment in the country is currently coordinated by technicians at the national level. The partners working at the counties/health facilities are primarily responsible for equipment follow-up and alert MOH/UNICEF for maintenance needs or for any other concern. MOH/UNICEF will then send technicians to sites and addresses the concern.
- *Follow-up of installation and maintenance activities:*
  Various mechanisms have been developed and are in use to monitor ongoing installation and maintenance activities for cold chain equipment.

  Cold chain technicians are required to report on new equipment installed or transferred as soon this happens. Cold chain installation confirmation form, inventory update form and maintenance job card have been developed to enable the country to track and keep records equipment and their status. The technicians will be trained on how to transfer the installation and maintenance records into electronic version for easy reporting and monitoring. The technicians will also be trained in how to track repair requests, identify common faults as to facilitate timely procurement of the commonly needed spare parts. The data will be shared with national cold chain technicians through reports or during field support supervision. They will also be required to submit to national level the equipment inventory updates on quarterly basis including working status. They will advise MOH on equipment that are obsolete that need to be disposed and removed from the list. MOH will develop a policy on equipment disposal.

  To monitor performance of the maintenance system for cold chain equipment, MOH has adopted set of indicators to be used. These include:

  - Functionality status of the cold chain equipment
  - Downtime of the equipment
  - Availability of trained technicians at national, states, and other important levels

While UNICEF plays a major role in raising resources for supporting equipment maintenance, implementing partners quite often also make their own contribution. Through Gavi, HSS, additional resources have been provided to support cold chain equipment maintenance.

Other implementation details

Provide 1 page

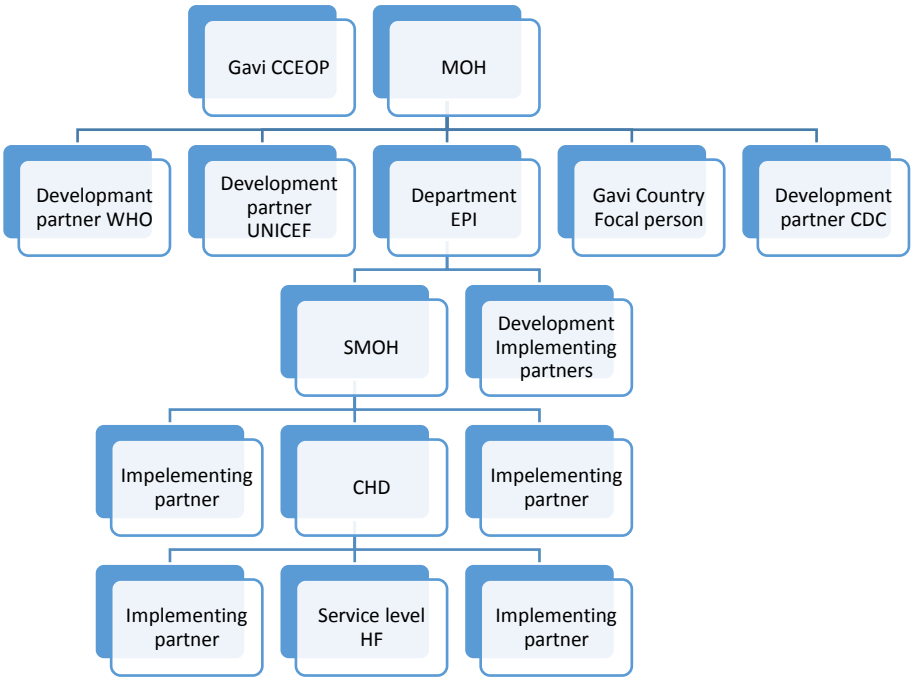
- *How will the country facilitate the manufacturer's or representative's role in equipment purchase, distribution and installation?*
- *What is the source of the joint investment? Is the country's joint investment secured?*
- *Has the country secured import tariff exemptions for CCE? If Yes, attach proof.*

A detailed cold chain requirement per year has been made in the cold chain replacement and expansion plan 2017-2021. Facilities where equipment is to be deployed have been identified with types and capacity of equipment to be deployed.

All vaccines and cold chain equipment in the country are procured through UNICEF supply division. Therefore all equipment needed to implement the support of this platform will be procured through UNICEF supply division which relates directly with the manufacturers ensuring compliance with all standards. Under this arrangement there is guarantee for compliance to all specification and standards for all the proposed equipment. In-country technicians will be available to benefit from the service bundle agreement of the CCEOP by fully participating in training for installation and maintenance.

All areas identified for deployment of CCE will be reviewed before the arrival of the equipment. Ongoing follow-up and assistance shall be provided to states, counties and facilities to assure readiness of appropriate and secure physical structure, and where qualified personnel are also available. This is to ensure deployment of CCEs to areas where they will be optimally put to use.

As soon as the equipment arrives in the country, they will be engraved and marked for easy visual identification. The Ministry of Health in collaboration with UNICEF will ensure distribution of equipment as planned. Equipment record will be kept by type, model, serial number and benefiting facilities. Once equipment reaches its intended destination, manufacturers/suppliers shall be invited to undertake the installation and commissioning activities as per the service bundle agreements stipulated in framework contract. Due follow-up, communication and verification shall be made at national, state, county and facility level.
Every effort shall be made to ensure transfer of skills and knowledge takes place in due course. The manufacturer in collaboration with UNICEF, Ministry of Health and EPI partners will collaborate to ensure successful training of cold chain technicians as well as the final users takes place regarding how to operate and manage this equipment.



Organisational chart for stake holders involved in the CCEOP

	The country joint investment funding of 20% is to be provided from the existing GAVI HSS plan 2016–2020 in part and from EPI partners. The total funds required for Co-financing in phase1 is $1,888,353.6 of which $1,331,365.16 will be secured from the Gavi HSS grant, $105,250.84 is from the Gavi grant for implementation of MenA immunisation activity and $451,737.6 from other donors that include; Japan $29,236.34; European Commission ECHO $25,373.47; UNOCHA UN Office (ECHO) $298,907.88; HARRIS (The Unite Kingdom of Great Britain and Northern Ireland) $98,219.91. The total funds required for Co-financing in phase1 is $858,015.6 which will be secured from the Gavi HSS grant. South Sudan therefore is certain of having the required 20% joint investment funding for the cold chain equipment optimization platform as the HSS proposal has been approved. In South Sudan, there is Memorandum of Understanding (MoU) signed between government and UNICEF exempting from tariff and taxes of all supplies and equipment coming to the country through UNICEF for programme assistance. This provision is contained in section 6 of Article VII on page 5 of the MoU attached as mandatory attachment #11
Waste management plans? *Provide 1 or 2 pages*	- *How does the country dispose of obsolete and irreparable equipment?* - *What are the plans to dispose of obsolete and irreparable equipment which be replaced by CCE optimisation platform-supported equipment?* Currently, the government of South Sudan has not deployed disposal policy and/or guideline for capital assets including vehicles, medical and cold chain equipment. The country however has adopted WHO-UNICEF PQS guidelines, which stipulates that all new procurements conducted must conform with specific requirements addressing availability of spare parts and components, and freedom from CFC. As there is limited national and sub-national capacity for maintenance of cold chain equipment, poor adherence to the rather astringent requirement to recover and recycle CFC-gases and insulating material was observed. The country does not have facilities for safe disposal of such materials in all states. The comprehensive cold chain inventory also identifies these gaps as one of the major reasons for the high number of obsolete equipment still laying in state, county and health facility stores. Understanding this, new efforts and initiatives are only picking. The country is in a process of forming National Logistics Working Group from MOH and partners to work in collaboration with national environmental departments in respective ministries to streamline and prepare enabling policies to enrich the available health care waste disposal that will also encompass obsolete and non-repairable cold chain equipment. The disposal policies and guidelines will be in line with Montreal protocol (later re-affirmed in the Kyoto agreement). The policies will include installation of high temperature incinerators in states and counties so as to ensure effective incineration and disposal of the CFC materials that highly contribute to environmental degradation and global warming. SOPs concerning handling of obsolete equipment, that forms part of the training package for the cold chain technicians and logisticians, has already been developed and printing is in progress. Technical assistance will also be provided to support the National Logistics Working Group in developing and creating awareness on guiding criteria to be followed by technicians. Using these, the technicians will monitor, assess and advise on equipment that is no longer economically viable or no longer fit for vaccine storage to be pulled out of the system, and oversee its proper disposal. Disposal of obsolete equipment will be managed at National, state and county level facilities.

4.2) Initial support

Provide maximum 3 pages, comprising:

South Sudan requires support of Gavi through the CCEOP to purchase and replace cold equipment base on the following need

1. Provision of CCEs to 32 county stores (LD) and more than 200 health facilities (SP) without equipment
2. Replacement of CCEs at 14 counties and HFs where equipment are vandalized as a result of conflict in the country.
3. Replacement of 194 absorption refrigerators that are not working due to energy and spare parts issues
4. Provision of SDD refrigerators to counties completely without electricity due lack of national grid supply in the country and unavailability of fuel to run generators
5. Replacement of obsolete solar fridges that used batteries whose spare parts are no longer in production

The equipment sought as a priority from the CCEOP is for equitable distribution but targeting as a priority 3/10 conflict states and 80% of non-functioning equipment due to breakage or lack fuel. This will target 40% of the birth cohort. The distribution plan is contained in the attached rehabilitation and expansion plan.

As highlighted in the bottlenecks, standalone SDD will offset the complications that arise from limited travel due to seasonal roads affected by weather, the passive equipment will enhance outreach programmes where there are constraints of infrastructure and sparsely populated communities. The supply of SDD will offset the constraints associated lack fuel for kerosene operated fridges thermos-generators.

- ***2 to 4 prioritised (urgent) CCE*** *needs (with justification provided in alignment with Strategic deployment plan, see sub-section in Annex 3 Table 3 of the* Application Instructions*),*
- ***At least 3 objectives*** *relating to supply chain fundamentals, with*
- *2 to 5 planned activities per objective.*

Please refer to the important information provided in *section 3.A* above

This initial support is designed to address identified (and urgent) peripheral facilities CCE and supply chain needs, catalyse progress on all supply chain fundamentals and facilitate full scale-up of transformed supply chain aligned to sustainable coverage and equity goals.	
Prioritised (urgent) CCE need 1:	*Justification* *Provision of SDD equipment to 16 unequipped counties and 14 counties where equipment were destroyed due to conflict as well as 200 unequipped service delivery health centres as well as provision of 40 long term passive devices in order to increase access to immunization service in line with global objective of equitable immunization service delivery. The provision of SDD will be a mix of replacement of obsolete equipment, replacement of vandalized equipment where security has improved as well as establishment of immunisation services for health facilities that do not have equipment. Iceliners will be provided to increase storage capacity for States in preparation for introduction of new vaccine*
Budget	**2017**

($USD):

Type of equipment	Equipment Model	Equipment Make	PQS indicative price/Unit cost $US	Estimated service bundle cost $US	Total unit cost $US	Number of equipment	Total amount $US
Off-grid/SDD refrigerators (with freezer comp.)	TCW 2043SDD	B Medical	9055	2150	11205	30	336,150
Off-grid/SDD refrigerators (without freezer comp.)	TCW 3043	B Medical	6782	2150	8932	30	267,960
Off-grid/SDD refrigerators (with freezer comp.)	TCW 40SDD	B Medical	5860	2150	8010	200	1,602,000
Long Term Passive Devices							
On-grid freezers							
On-grid freezers							
On-grid ice-lined refrigerator (ILR) (without freezer comp.)	VLS 400A Green Line	Vestfrost	1116	1350	2466	8	19,728
Long Term Passive Devices	Arktek-YBC-5	Aucma	2393	1350	3743	40	149,720
Voltage regulators (for existing equipment)							0
Temperature Monitoring Devices including 30-day loggers and/or remote technologies (for existing equipment)			44			270	11,880
Spare parts (for existing platform-eligible equipment)			1600			26	41,600
2017 TOTAL							2,429,038

Prioritised (urgent) CCE need 2:

Justification

Provision of SDD equipment to 20 unequipped counties and 250 unequipped service delivery health centres as well as provision of 40 long term passive devices in order to increase access to immunization service in line with global objective of equitable immunization service delivery. The provision of SDD will be a mix of replacement of obsolete equipment, replacement of vandalized equipment where security has improved as well as establishment of immunisation services for health facilities that do not have equipment. This will part of the phase will focus on the needs for introduction of new vaccines.
Iceliners will be provided to increase storage capacity for States in preparation for introduction of new vaccine.

Budget ($US

2018

D):

Type of equipment	Equipment Model	Equipment Make	PQS indicative price/Unit cost $US	Estimated service bundle cost $US	Total unit cost $US	Number of equipment	Total amount $US
Off-grid/SDD refrigerators (with freezer comp.)	TCW 2043SDD	B Medical	9055	2150	11205	20	224,100
Off-grid/SDD refrigerators (without freezer comp.)	TCW 3043	B Medical	6782	2150	8932	20	178,640
Off-grid/SDD refrigerators (with freezer comp.)	TCW 40SDD	B Medical	5860	2150	8010	250	2,002,500
Long Term Passive Devices							
On-grid freezers							
On-grid freezers							
On-grid ice-lined refrigerator (ILR) (without freezer comp.)	VLS 400A Green Line	Vestfrost	1116	1350	2466	42	103,572
Long Term Passive Devices	Arktek-YBC-5	Aucma	2393	1350	3743	40	149,720
Voltage regulators (for existing equipment)							0
Temperature Monitoring Devices including 30-day loggers and/or remote technologies (for existing equipment)			44			330	14,520
Spare parts (for existing platform-eligible equipment)			1600			31	49,600
2018 TOTAL							2,722,652

Countries ***are strongly encouraged to present at least 3 objectives for on-going or planned activities around other supply chain fundamentals*** *(e.g. continuous improvement plans, leadership, data for management and system design, see Section 3 of CCE optimisation platform* Application Instructions*).*

The CCE optimisation platform will not fund these activities but countries are strongly encouraged to present the budget for such activities and demonstrate funding availability.

Countries are strongly encouraged to:

- **Present a plan to monitor, collect and analyse temperature recording in all platform-supported CCE**. At a minimum, these should be via 30 Day Temperature Recorders, DTR. Options of remote monitoring should be considered as the technologies become available.
- Consider **implementing system design[11] interventions (not funded by the CCE optimisation platform)** to make immunisation service delivery more efficient and achieve coverage and equity goals.

Objective 1:	*To improve vaccine management at all levels.*
Budget ($USD) **and source:**	*$USD1,961,403.63*
Activities:	
1. Train staff on EVM	
2. Conduct supportive supervision on EVM	
3. Implementation of LMIS at all levels	
Objective 2:	*To improve the cold chain in the country immunisation supply chain system.*
Budget ($USD) **and source:**	*$USD543,085.74*
Activities:	
1. Recruitment and training cold chain technicians for national and state level	
2. Carry out regular CCE maintenance	
3. Update the CCE inventory	
Objective 3:	*Improve vaccine and dry storage capacity in preparation for introduction of new vaccines*

[11] These plans can vary from desk reviews to complex modelling of the country's supply chain system and distribution that identify ways to increase supply chain efficiencies, deliver more potent vaccines

Budget ($USD) and source:	*$USD542,879.20*
Activities:	
1. Architectural and costed design of a national vaccine store	
2. Construction of national store	
3. Rehabilitation of state and county vaccine stores	
Total Budget for CCE 'Initial support': (Years 1 and/or 2) $USD 5, 151, 690:00 The total funds required for Co-financing in phase1 is $1,030,338.0 (20%) of which $473,349.6 will be secured from the Gavi HSS grant, $105,250.84 is from the Gavi grant for implementation of MenA immunisation activity and $451,737.6 from other donors that include; Japan $29,236.34; European Commission ECHO $25,373.47; UNOCHA UN Office (ECHO) $298,907.88; HARRIS (The Unite Kingdom of Great Britain and Northern Ireland) $98,219.91.	
Total Budget for other supply chain fundamentals (not funded by CCE optimisation platform) 'Initial support': (Years 1 and/or 2) $USD 3,047,368.57 This include upgrading of EPI storage facilities at national and state level, transport, training of technicians, maintenance, LMIS management and EVM improvement	

4.3) Initial support activities –Evaluating implementation

Support for years 3 onwards will be contingent on an evaluation of the implementation of activities during the initial support phase.

Please refer to the important information provided in *section 3.B* above

4.4) Scale-up support

Provide maximum 3 pages, comprising:

- ***2 to 4 prioritised (additional) CCE needs*** *(with justification provided in alignment with Strategic deployment plan, see sub-section in Annex 3 Table 3 of the* Application Instructions),
- ***At least 3*** *objectives relating to supply chain fundamentals, with*
- *2 to 5 planned activities per objective.*

Please refer to the important information provided in *section 3.C* above

This second phase of Gavi CCE optimisation platform support will be provided for approximately year 3 onwards. Application for scale-up support should demonstrate how planned activities will address additional CCE needs, create synergies with on-going and or planned (other) supply chain fundamentals activities, and achieve immunisation

coverage and equity goals.

Prioritised (additional) CCE need 1:

Justification

Scale up at state, county and health facility levels.
Provision of SDD equipment to 10 unequipped counties and 200 unequipped service delivery health centres as well as provision of 10 long term passive devices in order to increase access to immunization service in line with global objective of equitable immunization service delivery. The provision of SDD will be a mix of replacement of obsolete equipment, replacement of vandalized equipment where security has improved as well as establishment of immunisation services for health facilities that do not have equipment.
This part of the phase will enhance the capacity needs for introduction of new vaccines.

Budget ($USD):

2019

Type of equipment	Equipment Model	Equipment Make	PQS indicative price/Unit cost $US	Estimated service bundle cost $US	Total unit cost $US	Number of equipment	Total amount $US
Off-grid/SDD refrigerators (with freezer comp.)	TCW 2043SDD	B Medical	9055	2150	11205	10	112,050
Off-grid/SDD refrigerators (without freezer comp.)	TCW 3043	B Medical	6782	2150	8932	10	89,320
Off-grid/SDD refrigerators (with freezer comp.)	TCW 40SDD	B Medical	5860	2150	8010	200	1,602,000
Long Term Passive Devices							
On-grid freezers							
On-grid freezers							
On-grid ice-lined refrigerator (ILR) (without freezer comp.)	VLS 400A Green Line	Vestfrost	1116	1350	2466	20	49,320
Long Term Passive Devices	Arktek-YBC-5	Aucma	2393	1350	3743	10	37,430
Voltage regulators (for existing equipment)							0
Temperature Monitoring Devices including 30-day loggers and/or remote technologies (for existing equipment)			44			260	11,440
Spare parts (for existing platform-eligible equipment)			1600			24	38,400
2019 TOTAL							1,939,960

Prioritised (additional) CCE need 2:	*Justification* *Scale up at state, county and health facility levels* *Provision of SDD equipment to 10 unequipped counties and 150 unequipped service delivery health centres as well as provision of 10 long term passive devices in order to increase access to immunization service in line with global objective of equitable immunization service delivery. The provision of SDD will be a mix of replacement of obsolete equipment and establishment of immunisation services for health facilities that do not have equipment.*

Budget ($USD)**:**

2020

Type of equipment	Equipment Model	Equipment Make	PQS indicative price/Unit cost $US	Estimated service bundle cost $US	Total unit cost $US	Number of equipment	Total amount $US
Off-grid/SDD refrigerators (with freezer comp.)	TCW 2043SDD	B Medical	9055	2150	11205	10	112,050
Off-grid/SDD refrigerators (without freezer comp.)	TCW 3043	B Medical	6782	2150	8932	10	89,320
Off-grid/SDD refrigerators (with freezer comp.)	TCW 40SDD	B Medical	5860	2150	8010	150	1,201,500
Long Term Passive Devices							
On-grid freezers							
On-grid freezers							
On-grid ice-lined refrigerator (ILR) (without freezer comp.)	VLS 400A Green Line	Vestfrost	1116	1350	2466	7	17,262
Long Term Passive Devices	Arktek-YBC-5	Aucma	2393	1350	3743	10	37,430
Voltage regulators (for existing equipment)							0
Temperature Monitoring Devices including 30-day loggers and/or remote technologies (for existing equipment)			44			180	7,920
Spare parts (for existing platform-eligible equipment)			1600			24	38,400
2020 TOTAL							1,503,882

Prioritised (additional)	*Justification* *Scale up at state, county and health facility levels* *Provision of SDD equipment to 100 unequipped service delivery health centres in order to increase access to immunization service in line with global objective of equitable*

CCE need 3:	*immunization service delivery. The provision of SDD will be a mix of replacement of aging equipment and establishment of immunisation services for health facilities that do not have equipment.*
Budget ($USD)**:**	

2021

Type of equipment	Equipment Model	Equipment Make	PQS indicative price/Unit cost $US	Estimated service bundle cost $US	Total unit cost $US	Number of equipment	Total amount $US
Off-grid/SDD refrigerators (with freezer comp.)							
Off-grid/SDD refrigerators (without freezer comp.)							
Off-grid/SDD refrigerators (with freezer comp.)	TCW 40SDD	B Medical	5860	2150	8010	100	801,000
Long Term Passive Devices							
On-grid freezers							
On-grid freezers							
On-grid ice-lined refrigerator (ILR) (without freezer comp.)	VLS 400A Green Line	Vestfrost	1116	1350	2466	6	14,796
Long Term Passive Devices							
Voltage regulators (for existing equipment)							0
Temperature Monitoring Devices including 30-day loggers and/or remote technologies (for existing equipment)			44			110	4,840
Spare parts (for existing platform-eligible equipment)			1600			16	25,600
2020 TOTAL							846,236

Countries ***are strongly encouraged to present at least 3 objectives on on-going or planned activities around other supply chain fundamentals*** *such as leadership, continuous improvement plans, data for management and system design (see Section 3 of CCE optimisation platform* Application Instructions*).* **<u>Countries are strongly encouraged to demonstrate funding (and implementation status) of on-going and or planned supply chain fundamental activities</u>**. Countries are strongly encouraged to: • I**mplement other supply chain fundamental activities during the scale-up support phase** *(see Section 3 of CCE optimisation platform* Application Instructions*)*. • Demonstrate **complementarity with country national strategies and documents and requested CCE optimisation platform support through the planned supply chain fundamental activities.**	
Objective 1:	*Improve vaccine management at all levels*
Budget ($USD) **and source:**	*$USD1,030,586.97*
Activities:	
1. Conduct EVMA	
2. Conduct supportive supervision on EVM	
3. Implement LMIS at all levels	
Objective 2:	*To improve the cold chain in the country immunisation supply chain system*
Budget ($USD) **and source:**	*$USD842,352.28*
Activities:	
1. Carry out regular CCE maintenance	
2. Carry monitoring and supervision of the cold chain technicians activities	
3. Update the CCE inventory	
Objective 3:	*Improve vaccine and dry storage capacity at national, state and county level*
Budget ($USD) **and sour**	*$USD434,125.16*

ce:	
1. Complete the construction and commissioning of the national vaccine store	
2. Rehabilitation of state and county vaccine stores	
3.	
Budget for CCE 'Scale-up support': (Year 3, 4 and/or 5) $USD 4, 505,058:00 The total funds required for Co-financing in phase1 is $858,015.6 which will be secured from the Gavi HSS grant	
Budget for other supply chain fundamentals (not funded by the CCE optimisation platform) 'Scale-up support': (Year 3, 4 and/or 5) $USD 2,307,064.42 This include upgrading of EPI storage facilities at national and state level, transport, training of technicians, maintenance, LMIS management and EVM improvement	

5. BUDGET

Implementation of budget for cold chain equipment expansion is expected to start in 2017. A total of 1,123 units of refrigeration equipment comprising 1040 units of solar direct drive refrigerators and 83 units of low energy consuming icelined refrigerators. Associated spare parts and 30-day temperature monitoring devices are also planned for as the equipment arrives every year. 100 long term passive storage devices are also included in the plan.

The plan covers all the equipment identified for replacement as well as equipping the health facilities currently without equipment. The plan is made by equipment type, year of procurement and costs of equipment from 2017 to 2021 for ease of implementation. Total Cost of Ownership tool version 1.0.2 was used to select specific models. Costing of selected equipment was done using the CCEOP budget template. Below is the summary of the budget while the link thereafter leads to detailed budget.

Year	Total Requirement	Sub-total Gavi Support	Sub-total Co-financing	Co-financing from Gavi HSS	Co-financing from Gavi MenA Grant	Co-financing from Other donors
	Phase1					
2017	$ 2,429,038.00	$ 1,943,230.40	$ 485,807.60			
2018	$ 2,722,652.00	$ 2,178,121.60	$ 544,530.40			
Sub-total	**$5,151,690.00**	**$4,121,352.00**	**$1,030,338.00**	**$473,349.6**	**$105,250.84**	**$451,737.6**
	Phase2 Scale up					
2019	$ 1,939,960.00	$ 1,551,968.00	$ 387,992.00			
2020	$ 1,503,882.00	$ 1,203,105.60	$ 300,776.40			

2021	$ 846,236.00	$ 676,988.80	$ 169,247.20			
Sub-total	**$4,290,078.00**	**$3,432,062.40**	**$858,015.60**	**$858,015.6**		
Total	**$9,441,768.00**	**$7,553,414.40**	**$1,888,353.6**	**$1,331,365.16**	**$105,250.84**	**$451,737.60**

Summary budget

Year of implementation	Type of equipment	Equipment Model	Equipment Make	PQS indicative price/Unit cost $US	Estimated service bundle cost $US	Total unit cost $US	Number of equipment	Total amount $US	Total yearly cost
2017	Off-grid/SDD refrigerators (with freezer comp.)	TCW 2043SDD	B Medical	9055	2150	11205	30	336,150	$ 2,429,038.00
	Off-grid/SDD refrigerators (without freezer comp.)	TCW 3043	B Medical	6782	2150	8932	30	267,960	
	Off-grid/SDD refrigerators (with freezer comp.)	TCW 40SDD	B Medical	5860	2150	8010	200	1,602,000	
	Long Term Passive Devices							-	
	On-grid freezers							-	
	On-grid freezers							-	
	On-grid ice-lined refrigerator (ILR) (without freezer comp.)	VLS 400A Green Line	Vestfrost	1116	1350	2466	8	19,728	
	Long Term Passive Devices	Arktek-YBC-5	Aucma	2393	1350	3743	40	149,720	
								-	
								-	
	Voltage regulators (for existing equipment)							-	
	Temperature Monitoring Devices including 30-day loggers and/or remote			44			270	11,880	
	Spare parts (for existing platform-eligible equipment)			1600			26	41,600	

Year of implementation	Type of equipment	Equipment Model	Equipment Make	PQS indicative price/Unit cost $US	Estimated service bundle cost $US	Total unit cost $US	Number of equipment	Total amount $US	Total yearly cost
2018	Off-grid/SDD refrigerators (with freezer comp.)	TCW 2043SDD	B Medical	9055	2150	11205	20	224,100	$ 2,722,652.00
	Off-grid/SDD refrigerators (without freezer comp.)	TCW 3043	B Medical	6782	2150	8932	20	178,640	
	Off-grid/SDD refrigerators (with freezer comp.)	TCW 40SDD	B Medical	5860	2150	8010	250	2,002,500	
	Long Term Passive Devices							-	
	On-grid freezers							-	
	On-grid freezers							-	
	On-grid ice-lined refrigerator (ILR) (without freezer comp.)	VLS 400A Green Line	Vestfrost	1116	1350	2466	42	103,572	
	Long Term Passive Devices	Arktek-YBC-5	Aucma	2393	1350	3743	40	149,720	
								-	
								-	
	Voltage regulators (for existing equipment)							-	
	Temperature Monitoring Devices including 30-day loggers and/or remote			44			330	14,520	
	Spare parts (for existing platform-eligible equipment)			1600			31	49,600	

Year of implementation	Type of equipment	Equipment Model	Equipment Make	PQS indicative price/Unit cost $US	Estimated service bundle cost $US	Total unit cost $US	Number of equipment	Total amount $US	Total yearly cost
2019	Off-grid/SDD refrigerators (with freezer comp.)	TCW 2043SDD	B Medical	9055	2150	11205	10	112,050	$ 1,939,960.00
	Off-grid/SDD refrigerators (without freezer comp.)	TCW 3043	B Medical	6782	2150	8932	10	89,320	
	Off-grid/SDD refrigerators (with freezer comp.)	TCW 40SDD	B Medical	5860	2150	8010	200	1,602,000	
	Long Term Passive Devices							-	
	On-grid freezers							-	
	On-grid freezers							-	
	On-grid ice-lined refrigerator (ILR) (without freezer comp.)	VLS 400A Green Line	Vestfrost	1116	1350	2466	20	49,320	
	Long Term Passive Devices	Arktek-YBC-5	Aucma	2393	1350	3743	10	37,430	
								-	
								-	
	Voltage regulators (for existing equipment)							-	
	Temperature Monitoring Devices including 30-day loggers and/or remote			44			260	11,440	
	Spare parts (for existing platform-eligible equipment)			1600			24	38,400	

Year of implementation	Type of equipment	Equipment Model	Equipment Make	PQS indicative price/Unit cost $US	Estimated service bundle cost $US	Total unit cost $US	Number of equipment	Total amount $US	Total yearly cost
2020	Off-grid/SDD refrigerators (with freezer comp.)	TCW 2043SDD	B Medical	9055	2150	11205	10	112,050	$ 1,728,462.00
	Off-grid/SDD refrigerators (without freezer comp.)	TCW 3043	B Medical	6782	2150	8932	10	89,320	
	Off-grid/SDD refrigerators (with freezer comp.)	TCW 40SDD	B Medical	5860	2150	8010	150	1,201,500	
	Long Term Passive Devices							-	
	On-grid freezers							-	
	On-grid freezers							-	
	On-grid ice-lined refrigerator (ILR) (without freezer comp.)	VLS 400A Green Line	Vestfrost	1116	1350	2466	7	17,262	
	Long Term Passive Devices	Arktek-YBC-5	Aucma	2393	1350	3743	70	262,010	
								-	
								-	
	Voltage regulators (for existing equipment)							-	
	Temperature Monitoring Devices including 30-day loggers and/or remote			44			180	7,920	
	Spare parts (for existing platform-eligible equipment)			1600			24	38,400	

Year of implementation	Type of equipment	Equipment Model	Equipment Make	PQS indicative price/Unit cost $US	Estimated service bundle cost $US	Total unit cost $US	Number of equipment	Total amount $US	Total yearly cost
2021	Off-grid/SDD refrigerators (with freezer comp.)	TCW 2043SDD	B Medical	9055	2150	11205	0	-	$ 836,636.00
	Off-grid/SDD refrigerators (without freezer comp.)	TCW 3043	B Medical	6782	2150	8932	0	-	
	Off-grid/SDD refrigerators (with freezer comp.)	TCW 40SDD	B Medical	5860	2150	8010	100	801,000	
	Long Term Passive Devices							-	
	On-grid freezers							-	
	On-grid freezers							-	
	On-grid ice-lined refrigerator (ILR) (without freezer comp.)	VLS 400A Green Line	Vestfrost	1116	1350	2466	6	14,796	
	Long Term Passive Devices	Arktek-YBC-5	Aucma	2393	1350	3743	0	-	
						0		-	
						0		-	
	Voltage regulators (for existing equipment)							-	
	Temperature Monitoring Devices including 30-day loggers and/or remote			44			110	4,840	
	Spare parts (for existing platform-eligible equipment)			1600			10	16,000	

Year of implementation	Type of equipment	Equipment Model	Equipment Make	PQS indicative price/Unit cost $US	Estimated service bundle cost $US	Total unit cost $US	Number of equipment	Total amount $US	Total yearly cost
Summary 2017 to 2021	Off-grid/SDD refrigerators (with freezer comp.)	TCW 2043SDD	B Medical	9055	2150	11205	70	784,350	$ 9,441,768.00
	Off-grid/SDD refrigerators (without freezer comp.)	TCW 3043	B Medical	6782	2150	8932	70	625,240	
	Off-grid/SDD refrigerators (with freezer comp.)	TCW 40SDD	B Medical	5860	2150	8010	900	7,209,000	
	Long Term Passive Devices							-	
	On-grid freezers							-	
	On-grid freezers							-	
	On-grid ice-lined refrigerator (ILR) (without freezer comp.)	VLS 400A Green Line	Vestfrost	1116	1350	2466	83	204,678	
	Long Term Passive Devices	Arktek-YBC-5	Aucma	2393	1350	3743	100	374,300	
						0		-	
						0		-	
	Voltage regulators (for existing equipment)							-	
	Temperature Monitoring Devices including 30-day loggers and/or remote			44			1150	50,600	
	Spare parts (for existing platform-eligible equipment)			1600			121	193,600	

The icon below leads to detailed budget for selected equipment by year from 2017 to 2021

New form SS CCE OP September Appli

6. PERFORMANCE FRAMEWORK

Countries must fill the Performance framework in the Gavi country portal as part of their applications.

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 Gavi Secretariat.

Programmatic reporting and targets and indicator updates will be made as part of the Gavi HSS performance framework. Countries are expected to consider relevant smart indicators to be monitored and reported against that span across the results chain, from inputs/processes to intermediate results and outcomes/impact.

Reports are to be submitted to Gavi as part of the Joint Appraisal and then to the High Level Review Panel (HLRP).

Data sources

The following data sources are examples that countries can choose from:

- DHIS2
- DVDMT
- HMIS
- WHO/UNICEF joint reporting form (JRF)
- Health facility assessments that include cold chain
- 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 CCE optimisation platform-eligible equipment (ILR, SDD or long-term passive device);
2. Number of facilities previously without equipment, newly equipped with CCE optimisation platform-eligible equipment (ILR, SDD or long-term passive device); **and**
3. Well-defined indicator proposed by country to reflect appropriate maintenance of equipment; for example percentage of equipped facilities with functioning cold chain[12].

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

Examples of additional intermediate results indicators are:

1. Functional status of cold chain equipment: Ratio of functional CCE and ratio of districts with at least 90% functional equipment;
2. Closed vial wastage: Rate at a national, district and facility level;
3. Forecasted demand ratio: Ratio of actual usage compared to forecast (vaccines);
4. Full stock availability: Ratio of facilities/districts without any stock out;
5. Stocked according to plan: Percentage of facilities/stores/districts that have stocks levels between set minimum and maximum stock levels;
6. Temperature alarms: Frequency and magnitude of heat and cold alarms per monitoring period (i.e., temperature excursion) and number of CCE devices with more than a certain level of temperature excursion;
7. Rate of health facilities dashboard use, timely analysis and use for decision making;
8. On-time and in-full (OTIF) delivery: Ratio of order completely delivered on time; **or**
9. Number of health managers trained and despatched for supply chain oversight function and rate of reported monitoring activities.

[12] **Indicator definition**: *% CCE functioning = (# functioning CCE devices) / (total # of CCE devices designated for use)*. CCE devices considered for this indicator include all refrigerators, fixed passive storage devices, walk-in cold rooms and freezers designated for string vaccines. Both the numerator and denominator should be collected from the same geographical area / period in time and should not include decommissioned equipment. Functionality of CCE is broadly defined to mean that the device is operable at a particular point in time for storing vaccine.