Application Form for Cold Chain Equipment Optimisation Platform support in 2019

Document Dated: November 2018

CCE Application Form	**Purpose of this document:** This application form must be completed in order to apply for support related to the CCE Optimisation Platform. Applicants are required to read the **Application guidelines** and **How to request new Gavi support** documents. Thereafter, applicants should complete this CCE Application Form and submit by email to proposals@gavi.org.
CCE TG 	**Resources to support completing this application form:** **Technology guide for equipment selection** for counties wishing to request CCE Optimisation Platform support is available here: 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: www.technet-21.org/en/resources/cold-chain-equipment-management
Weblinks and contact information: All application documents are available on the Gavi Apply for Cold Chain Equipment support webpage: http://www.gavi.org/support/process/apply/cceop/. For any questions regarding the application guidelines please contact countryportal@gavi.org or your Gavi Senior Country Manager (SCM).	

	Countries are informed that based on post IRC recommendations, **final approved amounts may be different** from what countries have requested. **This final approved amount will be dependent on the availability of funding.** **Gavi will respect countries' equipment selection. However, countries could also receive their 2nd or 3rd preference based on their selection in the budget.**

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PART A: APPLICANT INFORMATION

1. Applicant information		
Country	**Sudan**	
Date	**November, 2018**	
Contact name	**Dr. Elseddig Wahaballa Altayeb**	
Email address	<seddig75@yahoo.com>	
Phone number	+249123458093- +249125103335	
Total funding requested from CCE Optimisation Platform **(US $)**	**US $ 6,109,313**	
Does your country have an approved Gavi HSS support on-going?	Yes √	No ☐
	*Indicate the anticipated **final year** of the HSS:* 2019	
Proposed CCE Optimisation Platform **support start date** *(please be informed the actual start date should be at least 8-10 months from application date):*	*Indicate the month and year of the planned start date of the support, based on the strategic deployment plan:* October, 2019	
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:* December 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 Coordination Forum (HSCC/ICC or equivalent body)*	*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: Mohamed Abuzaid Mustafa Signature: Date:	**Minister of Health (or delegated authority)** Name: Muatz Mousa Abdallah Signature: Date:

PART B: MANDATORY ATTACHMENTS: NATIONAL STRATEGIES AND PLANS

This section provides a list of national strategies, plans and documents relevant to supply chain and requested support, which must be attached as part of the application.

☆	All documents listed in the table below are **mandatory**, must be **attached** to your application, and they must be **final** and **dated**. Only **complete applications** will be assessed.

2. Mandatory attachments					
No.	**Strategy / Plan / Document**	**Attached Yes/No**	**Final version (dated)**	**Duration**	**Comments**
1	Signature sheet for the Minister of Health and Minister of Finance, or their delegates	Yes	Jan, 2019	2018-2021	
2	Minutes of the Coordination Forum meeting (ICC, HSCC or equivalent) endorsing the proposal[1]	Yes	Nov 2018		
3	National Health Sector Development Plan/ Strategy (or similar)	Yes	Jun 2018	2017-2020	
4	Health System Strengthening Plan II	Yes	Jan 2014	2014-2018	Grant expires in June 2019
5	Optimize Immunization Supply Chain Report, 2017	Yes	July, 2017	One year	
6	JRF 2017	Yes	April 2018	One Year	
7	cMYP	Yes	Jan 2017	2017-2020	
8	EVM Assessment	Yes	Dec 2016	3 years	
9	EVM Improvement Plan	Yes	Dec 2016	2017-2020	
10	EVM Annual Workplan **and** Progress Report on EVM Improvement Plan[2]	Yes	Jan 2018 Up to October, 2018	One year 2017-2018	
11	WHO CCEI Tool/UNICEF IMT/PATH CCEM Tool/CHAI tool[3,4]	Yes	Auguts,2018	One year	Updated in August, 2018
12	Inventory Report and Facilities segmentation	Yes	Oct 2018	One year	Updated in August, 2018
13	Single document on CCE needs:	Yes	Aug 2017	2018- 2021	

[1] In the case of HSS and CCE Optimisation Platform requests, minutes must reflect that both were discussed and endorsed.
[2] The EVM IP and annual work plan progress report must have been updated within three (3) months before applying for Platform support.
[3] The CCE Inventory must have been updated within no more than one (1) year of applying for Platform support.
[4] Tool should allow reviewers to understand targeting of equipment to locations relative to contribution towards improving coverage and equity of immunisation.

2. Mandatory attachments					
No.	**Strategy / Plan / Document**	**Attached Yes/No**	**Final version (dated)**	**Duration**	**Comments**
	Chapter 1: Cold Chain Rehabilitation and Expansion Plan Chapter 2: Projected Coverage and Equity Improvements Chapter 3: Operational Deployment Plan, including deviation plan Chapter 4: Equipment Selection				
14	Maintenance Plan with financing and source(s)	Yes	Oct 2018	2018-2021	Updated
15	Proof of status for CCE tariff exemptions waiver/MOU	Yes	July, 2008		
16	Terms of Reference for the relevant Coordination Forum (such as ICC) including all sections outlined in Section 5.2 of the General Application Guidelines	Yes	2013		
17	Minutes of the Coordination Forum meetings from the past 12 months before the proposal	Yes	2018	One year	
18	Other relevant documents Immunization Supply Chain and Technical Working Group	Yes	Sep 2017	2017-2021	Immunization Supply Chain and Logistics Committee mandate
19	CCEOP supplementary recommended information	Yes	Sept 2017	2018-2021	Could be updated annually

3. How do the above strategies, plans and documents inform the CCE Optimisation Platform support request (initial support and scale-up support)? *(Maximum 1 page)*

The Sudan immunization national policies and strategies recognize the importance of improving immunization coverage and quality as a key component of the essential primary health care package. The different tenets of this platform are guided and are in line with the national health sector strategic plan 2017-2020 (Doc # 3 - *page 81 objective no 3 and page 113*), the immunization comprehensive multi-year plan cMYP 2017-2020 (Doc # 7-*section 2.3 page 76*), Gavi HSS plan (*Doc # 4-part B page 13*), the December 2016 EVM assessment (Doc # 8-*pages 11 and 12*) and EVM improvement plan and the cold chain rehabilitation based on the updated CCE inventory report 2018, expansion and maintenance plan and the updated 2018 cold chain inventory report. All these documents have improvement of cold chain as one of their main objectives and link to overall objective of the CCEOP and this gives a good opportunity for implementation of the objectives and strategies. The government of Sudan is committed to providing quality immunization services through the improvement of the cold chain equipment which is one of the six fundamentals of immunization supply chain fundamentals of Gavi. The CCE optimisation platform support will also facilitate the improvements in immunization supply chain operational planning and resource mobilization.

The introduction of new vaccines and targets for higher immunization coverage has increased demands on Immunization Supply Chain and Logistics (ISCL) systems. In addition diversity of service delivery strategies and expanding target population require more reliable and increased CCE infrastructure. It is from this background that the government of Sudan has decided to request for the Gavi CCEOP support to fulfil its mandate to provide quality immunization services to all children in

particular those that do not have equal access to immunization services due to lack of cold chain equipment.

3.1 Health Sector Strategic Plan (HSSP) (Doc No. 3)

The revised Health Sector Strategic Plan (2017-2020) provides the overarching framework and direction for different players in the sector to respond to the identified health challenges. The country is facing economic difficulties due to the loss of 75% of its oil revenue as a result of separation of South Sudan in 2011; the ongoing conflicts in some parts of the country and the $40 billion debt. These constraints have hampered the primary health care services including immunization and excavated the disparities between rural and urban as well as, disparities between and within states and localities.

The 25-Year Strategic Plan of National MoH is explicit about the importance of immunization in improving health outcomes. This strategic plan sets three objectives for the EPI namely: high immunization coverage, achieving polio certification and maintaining polio free status, and eliminating measles. The National Health Sector Strategy, emanating from the 25-year plan, also places great emphasis on improving immunization outcomes through expansion and strengthening of primary health care.

The Strategic directions of the HSSP pertinent to EPI are; (i) Expanding and strengthening primary health care with the aim of improving equity in access and providing an integrated, people-centred approach; and (ii) Implementing a defined minimum package, with immunization as a key component, at all PHC delivery outlets including community service delivery points (page 31). Expanding PHC/ immunization coverage is also highlighted in the HSSP strategic objectives and interventions (*Doc # 3: pages 76, 81, and 113)*

The provision of cold chain equipment through the CCEOP support will address some of challenges facing the health sector in particular immunization. Facilities in hard to reach and those with no equipment will ensure provision of vaccines and result in sustainable quality immunization services and thereby improve the coverage and equities in these areas. The aim of the CCEOP is strongly linked to the goal and objectives of the revised Health Sector Strategic Plan of 2017-2020.

3.2 Gavi HSS:2015-2019 (Doc No.4)

The Sudan HSS II has outlined four objectives to address the bottlenecks in the health systems and the first objective is to *improve sustainable and equitable access and utilization of quality Immunization services as part of an Integrated Primary Health Care focusing on underserved and disadvantaged population* (Doc# 4 Executive summary page 13). It is therefore anticipated that the procurement of cold chain equipment through Gavi CCEOP support will go a long way in addressing the above objective. Gavi has agreed to re-programme part of the HSS2 funds for 2019 and 2020 for government joint contribution for CCEOP support.

3.3 cMYP 2017-2020 (Doc No. 7)

The cMYP is the key document that aims at guiding the provision of essential, effective, efficient, and safe immunization to all eligible population. The Sudan cMYP has outlined the objectives, milestones and set out strategies to meet its goal of efficient immunization service delivery, increasing coverage, addressing equity challenges through a long and short term goals and programme priorities, taking into account the country context and its commitment to the Global immunization targets and sustainable millennium development goals (*Doc # 7 : section 2.3 for vision, mission, goal and objectives on page 76 and Immunization supply chain on pages 32-34 and section 2.4 for plan log frame on page 78 and 85)*

One of the specific indicators of the plan is to ensure that “90% of the equipment are functional by 2020 which is in line with CCE OP main objectives for the coming three years. The Gavi CCEOP support will complement government commitment to improving the immunization services as outlined in the cMYP.

3.4 EVM Assessment 2016 (Doc No. 8)

Sudan conducted the last EVM assessment in 2016 and the report outlined overall strengths and weaknesses of the supply chain and management and provided a list of recommendations to address the identified challenges at all levels of the supply chain *(Doc #8: page 11 on weaknesses and page 12 for recommendations on cold chain equipment)*.The EVM improvement plan was therefore developed to mitigate the key challenges following the identification of the cold chain bottlenecks. One of the key challenges is the low functionality and the insufficiency of vaccine storage capacity at some levels and this will be addressed through the Gavi CCEOP support over the next three years.

3.5 Cold Chain Inventory Report 2018 (Doc No. 12)

The comprehensive cold chain inventory assessment conducted in October 2016 and updated in August 2018, showed the following findings; 23% of the CCE are obsolete (more than 10 years of age), and 1,559 (45%) are PQS pre-qualified equipment and out of which, 1,321 are functional *(Doc # 9: Cold Chain updated Gap analysis tool August 2018 and attach 10. Inventory report.)* According to WHO protocol, equipment for vaccine storage is no longer optimum in performance after 10 years of operation hence its continuous use could lead to compromising vaccine potency. and those that do not perform well need to be replaced gradually.

The cold chain inventory findings guided the cold chain rehabilitation, expansion and extension planning, and used to request CCE support through CCEOP ***('initial support' and 'scale-up support')*** for the next three years. Most of the non PQS (SAMSUNG) were procured by States and were installed in health facilities that did not have the cold chain equipment. The tools used to collect data in the field did not capture information on serial numbers of the equipment and in future it is recommended that this information should be included.

3.6 Maintenance Plan (Doc No. 14)

The 2018-2021 maintenance plan main objective is ensuring at optimal performance of the cold chain equipment and maintaining high cold chain functionality of not less than 90% at all levels of the supply chain at any point of time. It outlines four keys specifics objectives: *(i) strengthening the preventive maintenance system at all levels; (ii) strengthening the curative maintenance system at all levels; (iii) building the capacity of the cold chain officers and technicians for supply chain maintenance at all levels and (iv) securing the logistics and financial requirements for effective cold chain maintenance system. (Doc # 14: section 2 on situational analysis page 4, section 3 on maintenance strategy page 10, section 4 on maintenance page 11 and section 5 on budget page 17).*

A robust immunization supply chain management (iSCM) structure is a foundation to achieve the immunization objectives. It is believed that, the Gavi CCEOP support when approved and implemented, will contribute to achieve the goals set out by the government as described in the cMYP and other referenced documents above to reach more children and women with quality vaccine, address equity by expansion of service to underserved communities and ultimately contribute to the reduction of Vaccine Preventable Diseases (VPDs) morbidities and mortalities in Sudan.

The documents referenced above are linked to improving the immunization supply chain system in Sudan and the CCEOP window of support has come at the right time to implement the policies, strategies and recommendations described in these documents.

Based on the GDP and joint investment of 50%, Sudan is expected to contribute about US $3,055,570.50 and this gives a total budget ceiling for CCEOP of US$6,111,141 as advised by Gavi. Although the gap analysis shows 782 equipment that is non PQS and obsolete, the number of equipment requested is prioritised to ensure that the budget does not exceed the ceiling. The total budget for the CCEOP is S$6,109,313 for the procurement of 921 equipment and 100 freeze free vaccine carriers between 2019 and 2021. The government of Sudan and partners will continue to mobilize more resources to ensure that the remaining equipment in particular the non PQS and obsolete equipment which are still in use are replaced to avoid compromising the quality of vaccines. An estimated 856 equipment remain to be replaced and cost about U$5,005,717 using the budget

template. The HSS 3 which will be developed in 2019 can also contribute addressing the gap. The summary of the equipment below aims at equipping the service points (health centres) that currently do not have the equipment and replace non PQS and obsolete equipment in the first two years of the support. This entails procurement of 658 CCE for extension of cold chain capacities and replacement of non PQS and obsolete equipment as well as increasing freezing capacities for some localities and states.

Table 1: shows summary of the total CCE request under the CCEOP ***per year and Type of Equipment***:

Phase	Year	ILRs	SDD	Freezer	Vac Carrier	Total
Initial 2019-20	2019	113	287	0	0	400
	2020	225	33	0	100	258
Scale-up 2021	2021	127	113	23	0	263
Total		465	433	23	100	1021

The below requirements are not part of the CCEOP ceiling of U$6, 109,313. The cost for the gap is U$5,005,717.00 The government of Sudan will mobilise additional resources to address the coming between 2022 and 2023.

Gaps not for CCEOP Support						
Phase	Year	ILRs	SDD	Freezer	Vac Carrier	Total
Scale-up 2022	2022	204	285	0	0	489
Scale-up 2023	2023	300	67	0	0	367
Total		504	352	0	0	856

4. Describe how supply chain stakeholders (including Coordination Forum (ICC/HSCC or equivalent), government, NLWG, NITAG, key donors, partners, CSOs and key implementers) have been involved in the application development including if the quorum at the endorsing meeting was met

Does the country have a permanent and functioning National Logistics Working Group (NWLG)? If No, does the country plan to establish one and when?

Gavi and its Alliance partners encourage the establishment of such group that coordinates Government and non-Government partners 'activities and investments related to the health supply chain including immunization.

Were any of Gavi's requirements to ensure basic functionality of Coordination Forums not met? Then please describe the reasons and the approach to address this (refer to section 5.2 of the General Guidelines for the requirements) *(Maximum 1 page)*

The first CCEOP proposal was developed and submitted in 2017. The development process involved all key stakeholders such as Ministry of Health, EPI, the ISCTWG, WHO and UNICEF. The final proposal was presented to HSSC and NITAG for endorsement before it was finally submitted to Gavi after being signed by both Minister of Health and Finance.

The country received IRC comments in November 2017 which recommended that the CCEOP proposal be resubmitted with key issues on data inconsistence, indicators and clarification of selected equipment be addressed.

In August 2018, Ministry of Health at the national and state levels started the process of CCE inventory update for proposal review and resubmission. In October 2018 UNICEF engaged one International and Local Consultant who worked on CCEOP documents including updating the gap analysis tool. Another international consultant was also engaged to update the cold chain inventory report. The development process led by FMoH and involved the same key stakeholders who kept on providing inputs at all stages of the development process (NHSCC, NITAG, ISCTWG, National and state EPI programmes, PHC, International Health, Gavi HSS unit, MCH programmes, WHO and UNICEF). The revised CCEOP proposal was presented to ISCTWG on 30th October 2018 and 4th November 2018 for their inputs.

The application was presented to the NHSCC committee on 24 December 2018 for discussions and endorsement and the quorum of the meeting was met and was 67%. Discussion points were clarified, and recommendations considered. By the end of the meeting the CCEOP application was endorsed.

PART C: SITUATION ANALYSIS AND REQUESTED SUPPORT

This section gives an overview of the types of information the IRC will anticipate from countries in their application for CCE Optimisation Platform support. This section must be filled with appropriate reference to the country documents listed in Part B. Countries are required to provide a narrative in response to the following questions.

5. Situation analysis of country's supply chain and CCE (number, distribution, functionalities etc.) *(Maximum 3 pages) Please respond to all questions*

Countries are encouraged to cross reference (document title, page number) attached mandatory documents.

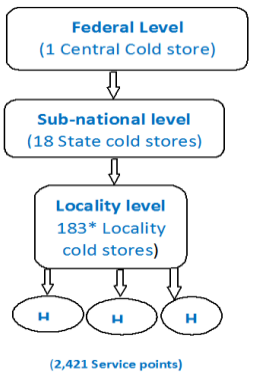
Information is required to cover the following areas:

a) How is the country's immunisation supply chain administered?
b) What weaknesses have been identified in the country's supply chain?
c) Through what interventions are these weaknesses currently being addressed?
d) Describe challenges that are hindering the implementation of these interventions.
e) Describe lessons learnt from recent supply chain related support that inform the current request for CCE Optimisation Platform support.
f) What percentage of facilities have reliable access to grid electricity for up to or more than 8 hours per day?
g) Please give the quantity and percent of current CCE that is: a) functional; b) PQS-approved; c) non-PQS-approved; and/or d) obsolete?
h) What percent of the birth cohort is served by effectively functioning, PQS-approved CCE currently?
i) What are the bottlenecks that CCE can address in the current supply chain set-up (for example, capacity and technology constraints)?
j) Describe any other supply chain challenges that CCE Optimisation Platform support will assist in mitigating?
k) What are the overall CCE needs?
l) Is the country policy to use cool water packs or conditioned ice packs?

a) How is the country's immunisation supply chain administered?

The EPI in Sudan is a vertical program established to provide immunization services to all people of Sudan and is within the Federal MoH. The Immunization Supply Chain operates on 4 levels:

- Central vaccine store (1)
- State vaccine stores (18)
- locality vaccine stores (183
- Health Facilities around (2,421)



The distribution strategy currently is push system where the vaccines and supplies are sent to the states on a quarterly basis from the Federal Store. The vaccines and injection devices are distributed to the locality stores from the states on monthly basis, and further distributed to the health facilities based on their demand / utilization. In some cases, pull system is also applied at sub-national levels.

Plans are underway to review the supply chain distribution system to optimize the design of the distribution system and this will increase the supply chain efficiency and at the same time addressing equity issues. Provision of refrigerated trucks has also been recommended to improve the supply chain system. (*Doc # 13: -single document page 5*)

b) What weaknesses have been identified in the country's supply chain?

The situation analysis displayed the major bottlenecks in ISC performance and the gaps in the system structure and organizations. It is obvious, the last mile is the most challenging level in the system due to lack of infrastructure (like distribution, warehousing, power supply, transport means, waste management, security), weak health management and administration, financial constraints, and interrupted human capacity building *(Doc # 5: Optimize Immunization Supply Chain 2017 Report, Section 3 pages 18-24)*

The key constraints in ISC in general, include the following:

- Dry chain storage capacity
- Maintenance of the cold chain equipment
- Distribution and delivery system at lower level
- Human resources
- Logistics information system and data collection
- Functional Cold chain equipment and Cold chain storage capacity
- Vaccines waste management

c) Through what interventions are these weaknesses currently being addressed?

The EVM improvement plan and the Optimize Immunization Supply Chain Report identified the interventions needed at each level (*Doc # 8 EVMA and Doc #5: Optimise Immunization Supply Chain Report Page 25-33)* The identified weaknesses are addressed through:

- Procurement of new cold chain equipment for extension of the immunization services
- Training of cold chain technicians on cold chain maintenance
- Procurement and provision of spare parts for maintenance and repair of the damaged CCE
- Training on vaccine management for health workers at all levels supply chain
- Training on data management, recording and reporting at all levels of the supply chain
- Training on VSSM for state ISC staff
- Improving the monitoring and supervision activities

d) Describe challenges that are hindering the implementation of these interventions.

Insufficient funding for procurement of new cold chain equipment, shortage of trained technicians at locality to carry out routine maintenance services and poor supply chain monitoring and documentation are the key challenges that hinder implementation of planned activities. Lack of spare parts and maintenance kits that enable the technicians to make on time repair and service of the cold chain equipment also affect the implementation of the interventions (*Doc # 8: EVMA report page 28 and 29 on findings; and cMYP doc # 7 Supply Chain and Vaccine Management Swot analysis page 70; Optimize Immunization Supply Chain doc # 5 section 4 and 5 on pages 18-33)*

e) Describe lessons learnt from recent supply chain related support that inform the current request for CCE Optimisation Platform support.

Between 2017 and 2018, 547 new refrigerators and freezers were procured and installed in service points and localities and replaced obsolete refrigerators. In addition, UNICEF also provided 40 solar refrigerators, 84 Ice lined refrigerators, 440 vaccine carriers, two large cold rooms with central temperature monitoring systems. An additional 10 ice lined refrigerators were also made available through government and WHO. The support also provided an opportunity to train 66 Cold Chain Technicians funded by UNICEF in partnership with Soba Solar Institute and Renewable Energy Research Centre. Out of these technicians, 25 were further trained by B-Medical in collaboration with EPI as certified installers for SDDs and ILRs including maintenance as part of agreement between B-Medical and the government. During installation, 18 teams of 54 Cold Chain Technicians (2 to 4 per state and 18 assistants per number of facilities and 5 supervisors) participated in the activity.

f) What percentage of facilities have reliable access to grid electricity for up to or more than 8 hours per day?

According to the CCE inventory updated in August 2018, there are 2,421 service points. Out of these service points 1,431 facilities (57%) have grid electricity up to or more than 8 hours per day. The remaining sites do not have electricity and will require to be supplied by Solar Direct Drive (SDD) refrigerators.

Table 2: Power supply status of the service points, 2018

Facilities with electricity >16hrs	Facilities with electricity 8-16hrs	Facilities with electricity <8hrs	Facilities with no electricity	Total Facilities
1,282	99	50	990	2,421

Source: CCE Inventory Gap Analysis updated 2018

g) Please give the quantity and percent of current CCE that is: a) functional; b) PQS-approved; c) non-PQS-approved; and/or d) obsolete?

- Total functional CCE in the country for all types (PQS, PIS and Non-PQS including cold and freezer rooms) as per updated August 2018 cold chain inventory is 2,760 (81%).
- Total non-functioning CCE in the country for all types (PQS, PIS and Non-PQS including cold and freezer rooms) at the time of the assessment is 623 (18%)
- 41 (1%) new cold chain equipment were not yet installed during the inventory update.
- Total PQS approved CCE are 1,559 (45%), out of which 1,362 are functional (87%)
- Total Non-PQS (1,046) and PIS (788) are 1,834 (54%), out of which 1,410 are functional (77%)
- Total obsolete CCE (more than 10 years age) are 782 (23 %)

Table 3: PQS approved and Non PQS approved CCE with functionality status

CCE	PQS	Non PQS	PIS	CR/FR	Total
Functioning	1,321	888	522	29	2,760
Non functioning	197	158	266	2	623
Not Yet Installed	41	0	0	0	41
Total	1,559	1,046	788	31	3,424

Source: CCE Inventory Gap Analysis 2018

Table 4: Functionality Status by Age

Age of CCE	Functional	NF	Not Installed	Total	% functioning
0 to 5 years	1,561	133	40	1,734	90%
5 - 10 years	616	291	1	908	68%
10 - 15 years	284	137	0	421	67%
>15 yrs	299	62	0	361	83%
Total	**2,760**	**623**	**41**	**3,424**	**81%**

Source: CCE Inventory Gap Analysis 2018

h) What percent of the birth cohort is served by effectively functioning, PQS-approved CCE currently?

There are a total of 1,321 functioning PQS-approved CCE in health facilities distributed across the country and provide services to about 91% of the annual birth cohort.

i) What are the bottlenecks that CCE can address in the current supply chain set-up (for example, capacity and technology constraints)?

CCE can:

- Expand the fixed immunization services network and reduce cost of the out-reach / mobile immunization services.
- Increase the cold storage capacity for the upcoming vaccines in the pipeline.
- Use of standard pre-qualified PQS CCE.
- Increase the functionality of the cold chain by providing timely spare parts.

j) Use of technology systems for monitoring and temperature control.

k) Complement other investment in strengthening the overall iSC.

j) Describe any other supply chain challenges that CCE Optimisation Platform support will assist in mitigating?

The CCEOP will assist in:

- Strengthening the cold chain rehabilitation and maintenance system and training of technicians on cold chain maintenance.
- Improving the supply chain information system, data management and monitoring.
- Ensuring budget line from the Government and partners for immunization supply chain improvement.
- Increasing government budget allocation and investment in immunization
- Improving equitable provision of sustainable immunization services.
- Bringing together the investment of all partners in one coordinated channel to strengthen immunization supply chain.

k) *What are the overall CCE needs?*

The overall needs are based on ceiling of **US$6,111,141** as required by Gavi. A total of **921** cold chain equipment and **100** freeze free vaccine carriers have been budgeted for the next 3 years. Of these, 400 cold chain equipment will be for new and unequipped services points, 70 will be for 66 localities and two states that have inadequate storage capacity and 451 will be installed in service points and localities replacing non PQS and obsolete cold chain equipment. This gives a total budget of U$6,109,313.00

The gap analysis identified **782** obsolete equipment in localities and service points and 240 new cold chain equipment have been budgeted to replace some of the above obsolete equipment by 2021.

To replace some of the remaining 542 obsolete equipment between 2022 and 2023, an additional amount of about $5,005,717 will be required to meet the overall needs. The total budget for all needs required is $11,095,030 and there is need for the government and partners to mobilize this additional funding of $5,005,717 for the improvement of the cold chain supply system over the five years. The HSS3 which will be developed in 2019 would be an opportune window of support to cover up the shortfall.

Table 5: Summary of the total CCE requirement under the CCEOP by phase and priority

Phase	Replacement/Rehabilitation				Expansion		Extension		Total	
	(non) functioning/and/or obsolete Non-PQS equipment to be replaced		(non)finctional and/or obsolete PQS equipment to be replaced							
	CCE	*Sites*	*CCE*	*Sites*	*CCE*	*Sites*	*CCE*	*Sites*	*CCE*	*Sites*
Initial 2019-2020	162	162			96	94	400	400	**658**	**656**
	Free free vaccine carriers						100	100	**100**	**100**
Scale-up 2021			240	240	23	23			**263**	**263**
Subtotal	**162**	**162**	**240**	**240**	**119**	**117**	**500**	**500**	**1021**	**1019**

l) ***Is the country policy to use cool water packs or conditioned ice packs?***

Sudan is currently using conditioned ice packs for distribution of vaccines from one level of the supply chain to other. Conditioned ice packs are also used during routine vaccinations at facility, outreach, mobile and supplementary immunization activities. Health workers are well trained in conditioning of ice packs as observed in the EVMA assessment report. (Doc # 8 E7 page 10)

6. Expected immunisation coverage, equity and sustainability results *(Maximum 2 pages)*
Please respond to all questions

Countries are encouraged to cross reference (document title, page number) attached mandatory documents.

Information is required to cover the following areas:

a) How will the requested Platform support concretely contribute to addressing identified geographic and socio-economic inequities and gender barriers to sustainable improvements in coverage and equity of immunisation? Examples may include (not exhaustive):
- *Geographically remote districts or those with low coverage*
- *Poorer communities (e.g. in the poorest 10% of the population)*
- *Communities where gender barriers are significant and/or where low levels of female education is common (as this is often associated with lower coverage)*

b) What analyses have been made, or what plans are underway, to optimise the design of the supply chain distribution system in order to improve the efficiency of the supply chain and contribute to achieving coverage and equity goals?

c) How have these system design considerations impacted the choice of CCE to be supported by the Platform?

d) Concretely, how will Platform support help improve the sustainability of the supply chain system?

a) *How will the requested Platform support concretely contribute to addressing identified geographic and socio-economic inequities and gender barriers to sustainable improvements in coverage and equity of immunisation? Examples may include (not exhaustive):*
   a. *Geographically remote districts or those with low coverage*
   b. *Poorer communities (e.g. in the poorest 10% of the population)*
   c. *Communities where gender barriers are significant and/or where low levels of female education is common (as this is often associated with lower coverage)*

The vision of EPI in Sudan is to reach every child regardless his/her sex, ethnicity, tribe, location, rich or poor. To guarantee this, immunization services in Sudan are distributed all over the country using different strategies (fixed, out-reach and mobile). Despite these efforts vaccination coverage achievement for routine vaccination varies among different districts. The 2017 JRF shows that 97 districts out of **185** achieved 90% or more coverage for routine MCV1, **55** localities achieved 80-89% coverage, 43 localities achieved 50-79% and none achieved less than 50% coverage. (*Doc # 6: JRF 2017 Report worksheet 6. Indicators*)

Inequities in immunization services may be due to geographical barriers, differences between populations with ethnicity, gender or socioeconomic status. In Sudan13.7% of the population have no access to PHC services with a significant portion being pastoralists/nomads, IDPs, communities with cultural/geographical barriers and/or living in conflict affected areas*. (Doc #-7: cMYP 2017-2020 page 16, 19 and 20).*

Geographical Coverage:

ımmunization service exists in 76% of PHC facilities while 13.7% population has no access to PHC services for the routine preventive services. This CCE platform will support extending 400 new immunization sites within the first phase of the support, improving access, reaching 147,985 children with sustainable immunization services, increasing the geographical coverage and contributing to achieving equitable routine immunization coverage.

Hard to reach, special and disadvantaged population:

These special groups will be reached by immunization services through different immunization strategies and accelerated activities, in the context of the CCE support priority will be given to the disadvantaged population and low immunization coverage performing communities, as outlined in

the EPI microplan. The CCE platform support will ensure continuous availability of potent vaccines for those populations to be delivered through special targeted strategies.

Economic Equity

Information on economic barriers to health/immunization services shows a decreasing trend in disparities for routine vaccination coverage, difference between the lowest and highest wealth quintiles for the previous ten years as picked from Sudan Household Surveys 2006 (59%), SHSS 2010 (44%) and MICS 2014 (38.4%). *(cMYP 2017-2020 page 19).* The poor communities are scattered all over the country. By the CCE platform support they will get access to sustainable immunization services within their communities, by providing appropriate cold chain equipment and making EPI services accessible to them, vaccination equitable coverage will be improved.

Gender

There is no documented evidence to conclude existence of gender-based disparities in accessing PHC/immunization services in Sudan. However; the existing routine immunization data for 2016 shows that, it is almost equal percentage of vaccinated children, where males are (49%) and females is (51%).

Volunteers providing routine and supplementary immunization services are predominantly females. In addition to that, in areas (e.g. Eastern zone of Sudan) that have certain norms related to limiting women contact with foreigners especially males, vaccination teams are usually selected from the local community female volunteers as much as possible in order to ensure gender equity in immunization services

The isolated rural areas and marginalised urban areas will have better sustainable and equal access to vaccination services due to the support of this CCEOP.

Therefore, the requested Platform support is planned to contribute to improve the access to immunization services and reducing the above identified inequities in immunisation coverage by focusing on the low performing districts and ultimately reduce the gaps in equity, socio economic and geographical discrepancies.

b) *What analyses have been made, or what plans are underway, to optimise the design of the supply chain distribution system in order to improve the efficiency of the supply chain and contribute to achieving coverage and equity goals?*

Transportation of vaccines is outsourced to two private companies with comprehensive long term contractual agreement/contracts. The contracts include scope of work, penalty clause for noncompliance and key performance indicators. *(Doc # 5: Optimize Immunization Supply Chain Report page 25-33; Doc # 13: Single document and Doc # 8 EVM 2016 Report)*

The current distribution system is a hybrid of push and pull. EPI with support from the partner has recruited a consultant to assess the current supply system for redesign with specific considerations to the immunization dry supplies (injection devices and immunization cards). (*Doc # 13: single document page 10).*

Plans are underway to review the supply chain distribution system after the expansion in order to optimize the design of the distribution system and by introducing the vaccine stock management software system into sub-national vaccine stores levels and this will increase the supply chain efficiency to deliver potent vaccines at the same time addressing equity issues. Provision of refrigerated trucks has also been recommended to improve the supply chain system. (doc # 13: *single document page 5*)

In re-designing the system for better efficiency, new technology that are adaptable to the country's conditions are being considered to replace the current obsolete and old technology and fill capacity gaps for current and future needs.

c) *How have these system design considerations impacted the choice of CCE to be supported by the Platform?*

The system design improvement will significantly improve the CCE procurement system for later cycles because it provides a robust, dynamic supply chain picture with available data to verify the future needs and impacts.
The SDD refrigerators will be deployed to remote areas and all those without electricity supply. The low maintenance demand for the SDD refrigerators is a strength especially for remote areas where deployment of technicians is difficult and once the solarisation of facilities is implemented in some facilities, ILRs will be installed. This has impacted on the selection of the equipment for different levels. (*Doc # 13: Single document P26*).

d) *Concretely, how will Platform support help improve the sustainability of the supply chain system?*

The platform support is expected to have significant impact on the immunization supply chain development and sustainability through:

- Replacement of aging cold chain equipment will make it possible to have efficient standard CCE which will ensure sufficient cold storage capacity and storing potent vaccines at locality and health facility level.
- Introduction of CCE with new efficient technology will ensure potency vaccines
- Provision of spare parts will address timely response to routine maintenance
- Training of users at facility level during installation for preventive maintenance of equipment.
- Facilitating uninterrupted supply of vaccines to all levels of the supply chain including geographically disadvantaged areas
- Strengthening and maintaining an efficient CCE monitoring and maintenance system will ensure high functionality of the supply chain all through and will ensure proper timely delivery of immunization sessions.
- Minimize the maintenance effort and cost.
- The CCEOP analysis, planning and monitoring will provide a platform for advocacy and resource mobilization to government and partners for sustainable strengthening of immunization supply chain.

Supply chain monitoring system will improve the monitoring mechanism for the functionality of the CC equipment and regular update of CCI.

7. Maintenance plan (and its source of funding) and equipment disposal *(Maximum 2 pages) Please respond to all questions*

Countries are encouraged to cross reference (document title, page number) attached mandatory documents.

Information is required to cover the following areas:

a) *How will the country ensure that aspects of maintaining the cold chain are addressed (e.g. preventive and corrective maintenance, monitoring functionality, technicians, financing for maintenance, etc.)?*
   - *What is the frequency of preventative and corrective maintenance that the country commits to (supported by partners)?*
   - *What technical support is anticipated for maintenance?*

b) *How will the country monitor the completion of preventive and corrective maintenance?*
   - *Which source(s) of funding will be used for maintenance, and to what extent are they assured?*

c) *How will the country dispose of obsolete and irreparable equipment replaced by CCE Optimisation Platform equipment?*

Functionality of the cold chain at all levels aims at <90% at any point of time in order to maintain good quality vaccines, reduce the wastage and ensure implementation of immunization sessions as planned. The findings of the EVM, 2016 showed variable performance between different levels in the country in regard to the maintenance criteria (E5) which ranged from 100% at the National level to 70% at the health centre level.*(EVM 2016 Report)*.

The specific objectives of the maintenance plan shall address the followings:

- Strengthen the system for corrective and preventive maintenance (planning and implementation) at all administrative levels in Sudan.
- Build the capacity of the cold chain officers and technicians for supply chain maintenance at all levels
- Secure logistics, spare parts and financing for the CCE maintenance
- Strengthen the monitoring and information management.

Preventive maintenance plans at each level will address the frequency, timeline and who shall conduct preventive maintenance for the cold chain equipment at each level according to the standard WHO guidelines. All the cold chain equipment at each level are scheduled for preventive maintenance (daily, weekly and monthly) at certain time. The immunization and cold chain officers/ users at each facility will be trained both under the CCEOP service bundle as well as by the cold chain technicians to conduct these activities.

The implementation of the preventive maintenance will be supervised and monitored at all levels by departmental cold chain technicians and EPI operation officers during supervision visits.

Routine maintenance plans will identify the cold chain equipment that needs repair and schedule them in order to be fixed within a period of 7 days from the time the break-down is reported. The corrective maintenance will be implemented by the state Cold Chain Technician as needed when an equipment breaks down is reported. As indicated in the maintenance plan, more cold chain technicians will be trained to improve their knowledge and skill.

Spare parts required for corrective maintenance This is part of the Gavi HSS support for existing cold chain equipment. The timely implementation of these activities will be part of the monitoring plan. The preventive and corrective maintenance activities should be recorded, and reports shared to the higher level through monthly temperature recording form. Related monitoring indicators for maintenance will be monitored as part of the monitoring plan *(CCE Maintenance plan).* The CCEOP support provides related spare parts for the equipment provided and these will be timely available to ease maintenance works.

The Government and partners mainly UNICEF, WHO and Gavi HSS are committed to supporting technical and financial needs of the cold chain maintenance plans. The WHO CCE gap analysis tool estimates that about **U$496,503** will be required for the maintenance in the next three years and **US$ 339,155** is already secured for maintenance plan, and further funds will be raised by the Government to fulfill the remaining needs.

b)How will the country monitor the completion of preventive and corrective maintenance? Which source(s) of funding will be used for maintenance, and to what extent are they assured?

Preventive and corrective maintenance plan will be developed for each level. The implementation plan will be supervised using structured checklists and be monitored using the following ongoing and proposed indicators:

- Percentage of cold chain equipment functioning /month/ national and sub-national levels.
- Availability of a preventive and corrective maintenance cards.
- Proportion of corrective interventions / repairs that are implemented timely (within 7 days) following the reporting of breakdown.
- Proportion of localities/districts that have an established maintenance register that is updated regularly and submitted to states for consolidation and finally at national level data.
- Availability of SOP at each level

The maintenance plan which will be funded by the government, UNICEF, Gavi HSS, WHO and other partners, will ensure that equipment is timely maintained through the availability of spare parts which will come together with the CCEOP or HSS support. This will improve the overall maintenance system in the country.

c)How will the country dispose of obsolete and irreparable equipment replaced by CCE Optimisation Platform equipment?

Decommissioning and safe dispose of CCE has not received due attention and the issue affects many countries including Sudan. The country will develop guidelines based on the recent decommissioning and safe disposal of cold chain equipment guideline document. This will entail formation of a National Committee with membership of all related bodies responsible for technical and financial waste/disposal management (Ministry of Environment, Ministry of Finance, Environmental health department, the private sector etc), they will be in charge of planning, defining the modalities to be implemented, costing and monitoring all the disposal procedures.

The guidelines and SOPs will have clear instructions, roles and responsibilities to ensure the appropriate decommissioning and disposal of non-functioning CCE, in accordance with e-waste management and hazardous waste management regulations and decommissioning and disposal framework. These activities will be funded by the government of Sudan.

8. Other implementation details *(Maximum 1 page) Please respond to all questions*
Countries are encouraged to cross reference (document title, page number) attached mandatory documents.

Information is required to cover the following areas:

a) How will the country facilitate the manufacturer's or representative's role in equipment purchase, distribution and installation?

b) What is the source of the joint investment and how much from each donor? Is the country's joint investment secured? Please complete the table below

c) If the country joint investment is coming from HSS, is this leading to a reallocation of the HSS budget? If yes, please inform which HSS activities are being replaced by this joint investment?

d) Has the country secured import tariff exemptions for CCE? If yes, attach proof.

a) Manufacturer's or representative's role in equipment purchase, distribution and installation?

The country has good experience in distribution and installation of CCE which will facilitate manufacturer's activities.

i. The development of the operational deployment plan will facilitate the purchase, distribution and installation.

ii. The health facility readiness assessment shall be conducted to validate the information provided in the deployment plan and the supplier provided with all the in-country logistics for equipment distribution and installations which would be planned with the manufacturer or representatives for all levels by the national, provinces and districts.

iii. Installation: The 66 cold chain technician teams at all levels will be involved in the installation as part of agreement by representative of manufacturers. The cost for the national teams will be covered by the government resources. This includes the 25 technicians that were trained by B-Medicals on installation and maintenance of Cold Chain Equipment. Each equipment installed will be certified by senior person at the facility by signing a form and endorsed by the technician.

b) Source of the joint investment

Sources of funding	Amount in US$
Total country joint investment (same amount as cell T34)	**3,299,030.00**
Government budget	**870,004.00**
Gavi resources[5]	
Current Gavi HSS	2,429,026.00
Future Gavi HSS	
Gavi PBF	
Total Gavi resources	**2,429,026.00**
Other donor funding (mention the name of donor/s)	

[5] The country is informed that Gavi will disburse directly to UNICEF SD the country's joint investment from HSS and/or PBF grants(s) that are not yet disbursed based on the information provided as a response to question 8b.

The Country has informed in its CCEOP proposal that has been endorsed by the ICC and signed by both Ministers of Health and Finance that its joint investment will come from Gavi HSS.

Donor 1:	
Donor 2:	
Donor 3:	
Total other donor/s funding	
Other funding (clarify the source)	
Other 1:	
Other 2:	
Other 3:	
Total other sources of funding	

Note: The total Gavi HSS for year 1 and 2 includes joint investment procurement fees of 8%. In year 1, total government contribution is $1,494,995 and $119,600 for fees. In year 2, the budget is $702,436 and $56,195 for fees. The budget for year 1 and 2 ($2,373,226) will be funded through current HSS. Year 3 government contribution including fees is $925,804.00 and this will be funded through government budget and currently there is US$207,909 with supply division for cold chain equipment.

c) If the country joint investment is coming from HSS, is this leading to a reallocation of the HSS budget? If yes, please inform which HSS activities are being replaced by this joint investment?

Yes, from the following activities:
1.08: Rehabilitate/upgrade (4) Family Health Centres in each of the six target states (24 FHC).
1.09: Rehabilitate/upgrade (6) Family Health Units (FHUs) in each of the six target states (36 FHU)
1.12: Provide essential equipment for existing PHC facilities that are not providing the full PHC package with focus on immunization: for (3) FHCs and (3) FHUs annually in the six target states"

d) Yes, the country has secured import tariff exemption for CCE. (Attached # 15)

PART D: INITIAL SUPPORT PHASE[6]

This **initial support phase** (through years 1 and 2) is designed to address urgent CCE needs contributing to improvements in coverage and equity, to protect vaccine stocks, complement investments in other supply chain 'fundamentals' and contribute to full scale-up of optimised, sustainable supply chains.

☆	Budgets are **not inclusive** of operational cost. Operational costs must be financed by Ministry of Health or other partners.

CCE	Further information on CCE rehabilitation and expansion plan, equipment selection and strategic deployment plan requirements is provided in Application guidelines Section 5, available at http://www.gavi.org/support/process/apply/cceop/

9. Prioritised (Urgent) CCE needs *(Maximum 3 pages)*

*Provide information on **2 to 4 prioritised (urgent) CCE needs** as identified in the 'CCE rehabilitation and expansion plan, equipment selection and strategic deployment plan requirements'.*

[6] Countries are kindly advised to apply for their full needs regardless of the Gavi CCEOP joint investment ceiling and the funding availability. It is important to inform however how CCEOP will be contributing towards fulfilling the needs identified.

For each prioritised (urgent) CCE need, please provide the following information:

1. ***The need:*** *Type of activity (e.g. replace obsolete CCE, extend CCE to unequipped facilities, etc.); specific CCE site (facility); type of equipment required; quantity of equipment items.*
2. ***Justification:*** *Reasons for urgent need (e.g. low CCE and/or immunisation (Penta3) coverage area, gender barriers, mobile population, etc.); current CCE and immunisation (Penta3) coverage in the population area.*
3. ***Expected outcome:*** *Anticipated increase in CCE and immunisation coverage (Penta3); anticipated progress against identified inequity (describe, in alignment with country Performance framework).*
4. ***Total CCE budget:*** *includes Gavi and country joint investment share*

Prioritised (Urgent) CCE Need #1

The need

The prioritized urgent CCE needs # 1 in 2019, are as following:

- To equip new and existing **400** health facilities that do not have cold chain equipment, and this will ensure extension of immunization sites and services which will address the unreached and underserved population.

Table 6: Types and quantities of required CCE

Urgent Need # 1	*Type Equipment*	*Specific CCE*		*Total Quantity*
New extension sites	Off Grid Refrigerator with freezer compartment	TCW 2043 SDD VLS 056 RF SDD	93 194	**400**
	On Grid ILR with freezer compartment	VLS 064 RF	113	
Total CCE				**400**

Justification

The priorities are identified after reviewing the available data from the CCE gap analysis and also taking into account the non PQS prequalified and over 10 years obsolete equipment. The three priority areas for the CCEOP support are distributed over the two-year period according to the needs.

New extended immunization sites: All these 400 health facilities do not have cold chain equipment and immunization services are either provided through outreach or mobile services which are done sometimes intermittently due to various reasons and result into low immunization coverage. These new health facilities once provided with new cold chain equipment will extend the primary health care services including immunization as part of the Primary Health Care supported by the Government to achieve the Universal Health Coverage (UHC) and equity. These PHC facilities will deliver immunization services, maximizing the immunization reach and will improve access to underserved communities and ultimately boost immunization coverage and improve equity. It will also complement other ongoing interventions to improve vaccine availability and quality as more health workers in these facilities will be trained. Once these sites are provided with CCE, they will be able to conduct outreach services and thereby make immunization services much closer to communities and increase the coverage. Transport for outreach services will be provided through HSIS support.

Expected outcome

- The National Sector Strategic plan is to bring basic PHC services within 5kms from communities. Availability of the CCE in the 400 new

<table>
<tr><td></td><td>immunization sites, will contribute to enhance the reach of immunization services for 147,985 target population (9% more). This will impact on increasing the coverage at all levels (facility, districts and national) and will contribute to improve the equity dimension as well.
▪ This extension will enhance the overall Penta3 coverage to reach the cMYP target of 95% at national level and not less than 80% at locality level by 2020. Increased access for sustainable immunization services to reach un/ under vaccinated children, (especially in areas with difficult access) with improve quality potent vaccines for all children, regardless of their socio-economic conditions and where they live. The 9% additional birth cohorts will be served with effective qualified CCE to ensure sustainable immunization services with potent vaccines.
Refer: Updated cold gap analysis August, 2018</td></tr>
<tr><td>Total CCE budget</td><td>• Total CCE budget for Urgent CCE need # 1 is: US$ 2,989, 990
• The country joint investment share is: 50%
• Gavi investment share is: US$ 1,494,995
• Government investment share is: US$ 1,494,995
In additional the government will pay U$119,600 to UNICEF as part of the joint investment procurement fees of 8%.</td></tr>
<tr><td colspan="2">Prioritised (Urgent) CCE Need #2</td></tr>
<tr><td>The need</td><td>The prioritized urgent CCE needs # 2 in 2020, are as following:
• To replace/ rehabilitate non-PQS with 162 PQS pre-qualified equipment in 162 sites
• To expand the CCE capacity with 96 CCE in 94 localities and sub-national levels.
• To procure 100 freeze free vaccine carriers and pilot them 100 new facilities. The government and other partners will compliment by procuring the remaining 200 using its resources when rolling out these new devices.

Table 7: Types and quantities of required CCE

<table>
<tr><th>Urgent Need # 2</th><th>Type of Equipment</th><th>Model</th><th>Quantity</th><th>Total Quantity</th></tr>
<tr><td rowspan="2">Replace and Rehabilitate</td><td>Off grid refrigerator</td><td>VLS 056 RF SDD</td><td>7</td><td rowspan="2">162</td></tr>
<tr><td>On grid refrigerators</td><td>VLS 064 RF</td><td>155</td></tr>
<tr><td rowspan="2">Expansion</td><td>On grid refrigerators</td><td>TCW4000AC</td><td>70</td><td rowspan="2">96</td></tr>
<tr><td>Off grid refrigerator</td><td>TCW40 SDD</td><td>26</td></tr>
<tr><td>Long Term Passive Devices</td><td>Freeze free vaccine carriers</td><td>ARK_TEK_YBC_5</td><td>100</td><td>100</td></tr>
<tr><td>Total CCE</td><td></td><td></td><td></td><td>358</td></tr>
</table>
</td></tr>
<tr><td>Justification</td><td>Replacement: Sufficient, well-functioning cold chain equipment is one “fundamental” prerequisite for an effective immunization supply chain. Renewal of all aging (more than 10 years), and replacement of all non PQS standard CCE (>10yrs), will ensure availability of effective CCE which will contribute to improve</td></tr>
</table>

	the availability of potent vaccines in the country, improving access to sustainable quality immunization services and equity dimensions. The replace also includes gas refrigerators and solar refrigerators that use batteries which are difficult to maintain due to lack of spare parts. A total of **162** equipment are planned to be procured in the initial phase for health facilities. **Cold Chain Capacity Expansion:** There are many localities and health facilities with CCE storage capacity less than the actual required capacity for the targeted population. Covering the cold storage capacity gap, will ensure sustainable immunization services throughout the year, especially in areas difficult to access during the long rainy season. Thus, 96 CCE will be procured for 92 localities and 2 states totaling **94** sites to increase the storage capacity **Freeze free vaccine carriers:** 100 freeze free vaccine carriers will be procured through Gavi CCEOP support in year two and piloted in 100 health facilities which will be equipped in 2019 with new CCE. The government will be responsible for rolling out the use of freeze free vaccine carriers to facilities.
Expected outcome	• The replacement of **162** of non PQS prequalified equipment will ensure providing quality immunization services through the use of safe and potent vaccines to all children. This will impact on increasing the coverage at all levels and ultimately contribute to improve the equity. • Increase the storage capacity and availability of the vaccines for **94** localities and will also ensure that vaccines are always in stock in all the service points under these localities. This will in turn ensures sustained immunization services through the year and thereby increase the immunization coverage among the target population. • Prevent freezing of vaccines during transportation to outreach clinic services and thereby ensure use of safe vaccines. Provision of these devices will improve the ratio of freeze free to non-freeze free vaccine carriers from zero to 1:105 and this ratio will further improve once the country considers rolling out the use of these devices.
Total CCE budget	• Total CCE budget for Urgent CCE need # 2 is: **US$ 1,404,872** • The country joint investment share is: 50% • Gavi investment share is: **US$ 702,436** • Government investment share is: **US$ 702,436** In additional the government will pay **U$56,195** to UNICEF as part of the joint investment procurement fees.

Prioritised (Urgent) CCE Need #3	
The need	
Justification	
Expected outcome	
Total CCE budget	
Prioritised (Urgent) CCE Need #4	
The need	
Justification	
Expected outcome	
Total CCE budget	
GRAND TOTAL CCE BUDGET: Initial support (Years 1 and 2)	

10. Summary of INITIAL SUPPORT PHASE replacement/rehabilitation, expansion and extension plan

All countries must fill this section to highlight the number of equipment and corresponding number of sites these equipment will serve to meet their replacement/rehabilitation, expansion and extension targets. The values entered below must align with those in Section 9 above and in other parts of the application form.

Replacement/Rehabilitation				**Expansion**		**Extension**	
Existing sites with (non)functional and/or obsolete non-PQS equipment to be replaced with platform-eligible ILR, SDD or long-term passive devices (including equipping sites with a larger equipment)		Existing sites with (non)functional and/or obsolete PQS equipment to be replaced with platform-eligible ILR, SDD or long-term passive devices (including equipping sites with a larger equipment)		Equipping existing sites with ADDITIONAL pieces of equipment for new vaccine introduction and/or to serve an increasing population		Equipping previously unequipped sites (providing immunisation services or not, including existing sites without active devices) and add new service sites	
No of Equipment	*No of sites*	*No of Equipment*	*No of sites*	*No of Equipment*	*No of sites*	*No of Equipment*	*No of sites*
						400	400
162	162						
						100	100
				96	94		
162	**162**			**96**	**94**	**500**	**400**

Note: 100 are freeze free vaccine carriers and to be installed in 100 of the 400 sites in year 2.

11. Ongoing or planned activities around other supply chain fundamentals <u>in the initial support phase</u>	
In this section, linkages must be drawn between requested CCE Optimisation Platform support, on-going Gavi investments (especially through the Health Systems Strengthening support) and other partner supply chain support. *Describe planned or ongoing activities related to other supply chain fundamentals during the initial support phase, including their sources of funding. Responses to this section should be linked to the EVM Improvement Plan.*	

Supply chain managers
Describe all planned or ongoing activities related to improving the availability and performance of supply chain managers, their sources of funding, and partner support.
	Taking into consideration the different recommendations EVM, the program is implementing and planning to implement certain measures and activities on all levels to improve the performance of the cold chain managers which are:
	• To ensure that all sub-national levels have supply chain managers on job.
	• Capacity building of cold chain mangers on Immunization supply chain management specialized courses:
	  ○ Cold chain and vaccine management
	  ○ Logistics management
	  ○ Information system and monitoring, etc
	• To review and update all the vaccine and CCE management and monitoring tools (inventory, maintenance cards ordering and delivery, distribution etc.)
	UNICEF supported the government to train 66 Cold Chain Technicians at national, sub national and in some localities on cold chain maintenance and installation (ILRs and SDD) and out of this, 25 were trained as certified installers by B Medical. These technicians are providing on-job training for vaccinators.

Data for supply chain management *Describe all planned or ongoing activities related to data for management, their sources of funding, and partner support. In particular, provide information explaining how improvements to the functionality of logistics management systems will improve the visibility of up-to-date and accurate vaccine stock records at each level of the vaccine supply chain.*	▪ At national level, vaccine forecast is yearly done jointly by the MOH and UNICEF and shared with UNICEF supply division. ▪ Vaccine stocks data are reported monthly from all levels including wastage data. ▪ Electronic Vaccine Stock Supply Management (VSSM) software system is used at the National level and in a few states. ▪ Expansion of the use of the Vaccine Stock Supply Management (VSSM) software system to all sub-national

	level is planned. Installation of the software and training of sub-national staff on the new computerized system only done at national level and 4 states only and this will continue in 2019 through support from Gavi HSS. ▪ Verification of data completeness, accuracy and quality for vaccine logistics at facility level would be carried out during routine supervision ▪ Training of the related personnel on data management and reporting at all levels of the supply chain. ▪ Update and print of the required stock records, cards, etc and tools for all levels (Doc #10 EVM progress report). ▪ Capacity building and strengthening of the logistics management and monitoring system along with the Anticipated improvement, and CCEOP platform implementation is expected to result in the improvement of the vaccine management practices and stock records at all levels of the supply chain. The funding of the mentioned activities will be supported by the Government, Gavi HSS, and partners mainly UNICEF and WHO.
Optimised, efficient design of distribution system *Describe all planned or ongoing activities related to distribution system design optimisation, their sources of funding, and partner support.*	In preparation for the CCEOP proposal, EPI with Support from Gavi and UNICEF the country conducted a study in 2017 to assess and redesign the supply system with focus in the integration of all the dry supplies with the National Medical Supply Funds. This is expected to reduce the operational cost and help allocating the saved funds to reach more children in remote and hard-to-reach areas (Doc # 5). At the mean time distribution of immunization supply is vertical and outsourced by government to private contractors. It is proposed that refrigerated trucks be procured for the national immunization programme for distribution of vaccines and injection devices.
Continuous improvement process *Describe all planned or ongoing activities related to continuous improvement processes, their sources of funding, and partner support.*	The immunization supply chain improvement is a continuous ongoing process as part of the immunization programme and health system

	strengthening. The different cold chain and vaccine management assessments and evaluation had been conducted as EVM, Cold chain inventory (reports attached), Optimize Supply Chain Report and previous EPI reviews, etc. The findings and recommendations of these assessments are usually implemented and monitored rigorously. The last EVM of Dec 2016 had shown good progress in the score of all different components of the EVM criteria. The overall score by criteria was 89% in 2016 (the standard required score is 80%)) in comparison to the previous score of 76% obtained during the EVM assessment of 2013. An improvement plan was prepared and implemented which addresses the different components of the cold chain and vaccine management at different levels. The cold chain with support from Government, UNICEF and WHO had been expanded by installing new CCE at different levels for increasing the storage capacity and expansion of immunization services into new sites. Temperature monitoring devices are used at all levels, the CCEOP support with bundled temperature recording devices (30-day temperature logger) will contribute to strengthen the temperature monitoring system. Capacity building and training of cold chain technicians is a continuous activity and implemented every year. Vaccine management training specifically and as part of the Immunization Mid-Level Management (MLM) training course will continue to be conducted. The funding for the mentioned activities will be supported by the Government, Gavi HSS, and partners mainly UNICEF and WHO as usual.
Temperature monitoring *Describe the temperature monitoring devices that are currently available in the country? E.g. central level (CTMS), sub-national, lowest distribution and service delivery levels (30 DTRs and RTM devices), and during transportation (freeze tags).* *Furthermore, describe which measures are in place to a) obtain temperature data from the various devices;*	**At the central level** There are two types of temperature monitoring recording system in place; Continuous 24 hours electronic computerized temperature recording (**Darca** is a Downloading and remote-control application for windows 98-SE and windows NT4/200/XP. It communicates with Eltek 1000 Series squirrels, the device uses

b) act following temperature alarms (curative maintenance); *c) in case of RTM devices, please elaborate on SOPs for each responder in the temperature monitoring system; and* *d) countries wishing to purchase such devices are required to demonstrate how the recurrent costs, such as HR, data transmission, analysis etc., will be covered in this section.*	wireless data logging system) with SMS alarming connected to the responsible mangers mobile phones, immediate actions are taken if required as a response for any alarm. At the same time manual temperature monitoring and recording twice daily/7 days/ week is also practiced. Temperature mapping study for all cold rooms at the central level is conducted. The score of criterion E2 of the last EVM was 100% at central level for temperature monitoring. (Doc # 8: *EVM Rept 2016)* As a commitment to improve the supply chain in the country, the government of Sudan is in the process of conducting temperature monitoring study. All the required devices have been procured with support from WHO and UNICEF. Temperature monitoring forms have been revised which capture information on alarms and a system will be designed to ensure that information on temperature is routinely obtained and shared from the facility to national levels. SOPs on vaccine management including temperature monitoring were developed and distributed for each level on how to act on temperature alarms. There are two types of temperature monitoring recording system in place at national level; electronic continuous temperature recording with SMS alarming and manual temperature monitoring which record temperature twice daily/7 days week. **At sub-national and locality** level manual temperature recording and monitoring system is used twice daily/7 day a week through the use of Fridge Tag 2. You do not mention what type of temperature monitor is used? Temperature records are reviewed on monthly basis by EPI staff using the temperature record form including a space for entering alarm events and action taken. These are archived for more than 3 years. The EVM score for temperature monitoring at the state and locality levels were 83% and 96% respectively. *(EVM Rept 2016).* The Ministry of Health is planning to install

	Remote Temperature monitoring (RTM) devices in the cold rooms at sub-national level and will be supported by WHO and UNICEF. **At health facility level,** different types of temperature monitoring devices are used**.** Fridge tag is used as a continuous temperature-monitoring device and all facilities are now equipped with these devices. In general, the staff at the vaccine stores at all levels has satisfactory knowledge of the recommended storage temperatures for all vaccines*. (EVM Report 2016).* All cold stores managers at all levels were trained on temperature monitoring, recording and reporting of data to the higher level. **Vaccine distribution and transportation**, packing practices are in accordance with the national SOPs. The staff at all levels are aware about ice—packs conditioning. Freeze tags are usually packed with vaccines during transportation and the status recorded in most vaccine issuing and receiving vouchers. The country is conducting temperature monitoring study at all levels of the supply chain up to outreach site. The study is conducted with technical and financial support from UNICEF. The overall cost of the different temperature monitoring activities is covered as part of the cold chain recurrent cost covered by the Government and partners.

PART E: SCALE-UP SUPPORT PHASE[7]

This second phase of Gavi CCE Optimisation Platform support (provided from approximately year 3 onwards) is designed to address additional CCE needs as part of optimising design and increasing the sustainability of the supply chain.

☆	Budgets are **not inclusive** of operational cost. Operational costs must be financed by Ministry of Health or other partners.

12. Prioritised (Additional) CCE needs *(Maximum 3 pages)*

*Provide information on **2 to 4 prioritised (additional) CCE needs** as identified in the 'CCE rehabilitation and expansion plan, equipment selection and strategic deployment plan requirements'.*

For each prioritised (additional) CCE need, please provide the following information:

1. ***The need:*** *Type of activity (e.g. replace obsolete CCE, extend CCE to unequipped facilities, etc.); specific CCE site (facility); type of equipment required; quantity of equipment items.*
2. ***Justification:*** *Reasons for urgent need (e.g. low CCE and/or immunisation (Penta3) coverage area, gender barriers, mobile population, etc.); current CCE and immunisation (Penta3) coverage in the population area.*
3. ***Expected outcome:*** *Anticipated increase in CCE and immunisation coverage (Penta3); anticipated progress against identified inequity (describe, in alignment with country Performance framework).*
4. ***Total CCE budget:*** *includes Gavi and country joint investment share*

Prioritised (Additional) CCE Need #1

The need

The prioritized Additional CCE needs in 2021, are as following:

- To replace/ rehabilitate **240** non PQS & PQS obsolete CCE that have been in use for more than 10 yrs.
- To expand freezing capacity in 20 localities and 3 states.

Table 9: Types and quantities of required CCE

Urgent Need # 3	Type of Equipment	Model	Quantity	Total Quantity
Replacement and rehabilitation	Off Grid Refrigerator with freezer compartment	TCW 2043 SDD	58	240
		VLS056SDS	55	
	On Grid ILR	TCW 4000 AC	40	
		VLS 064 RF	87	
Expansion		TFW 800	23	23
Total Equipment				**263**

[7] Countries are kindly advised to apply for their full needs regardless of the Gavi CCEOP joint investment ceiling and the funding availability. It is important to inform however how CCEOP will be contributing towards fulfilling the needs identified.

Justification	**Replacement:** Sufficient, well-functioning cold chain equipment is one "fundamental" prerequisite for an effective immunization supply chain. Through this phase, replacement of obsolete PQS CCE will ensure availability of effective CCE which will contribute to improve the availability of potent vaccines in all the country, improving access to sustainable quality immunization services and equity dimensions. The gap analysis identified **782** obsolete equipment in localities and service points, 240 functional and obsolete equipment were identified to be replaced in 2021. This was also prioritized due to budget ceiling. Replacing obsolete equipment will ensure maintaining high efficiency cold chain equipment and safe vaccines. Most of the non- functioning CCE have been in system since the establishment of the EPI programme and have never been decommissioned.. **Cold Chain Capacity Expansion:** The inventory shows that there are 20 localities and 3 states that have inadequate freezing capacities. Covering the cold storage capacity gap, will ensure sustainable immunization services throughout the year, especially in areas difficult to access during the long rainy season and **23** CCE will be procured for 20 localities and 3 for the states. These are mostly for freezing ice packs that are conditioned for transportation of vaccines to localities.
Expected outcome	• It is expected that the second phase of CCEOP support will contribute to improve the overall Penta3 coverage gradually, to reach the cMYP target of 95% at national level and not less than 80% at locality level. ▪ The replacement of 240 CCE in facilities will contribute to maximize to reach 216,835 children with immunization services by ensuring the constant availability of safe vaccines and this will impact on increasing the coverage at all levels (facility, districts and national). ▪ Increased access for sustainable immunization services to reach un/ under vaccinated children, (especially in areas with difficult access) with improved quality potent vaccines for all children, regardless of their socio-economic conditions and where they live.
Total CCE budget	• Total CCE budget for Additional CCE need # 1 is: **US$ 1,714,451** • The country joint investment share is: 50% • Gavi investment share is: **US$ 857,226** • Government investment share is: **US$ 857,226** In additional the government will pay **U$68,578** to UNICEF as part of the joint investment procurement fees
Prioritised (Additional) CCE Need #2	
The need	
Justification	

Expected outcome	
Total CCE budget	

Prioritised (Additional) CCE Need #3	
The need	
Justification	
Expected outcome	
Total CCE budget	
Prioritised (Additional) CCE Need #4	
The need	
Justification	
Expected outcome	
Total CCE budget	
GRAND TOTAL CCE BUDGET: "Scale-up support" (Years 3, 4 & 5)	

13. Summary of SCALE-UP SUPPORT PHASE replacement/rehabilitation, expansion and extension plan

All countries must fill this section to highlight the number of equipment and corresponding number of sites these equipment will serve to meet their replacement/rehabilitation, expansion and extension targets. The values entered below must align with those in Section 9 above and in other parts of the application form.

Replacement/Rehabilitation				**Expansion**		**Extension**	
Existing sites with (non)functional and/or obsolete non-PQS equipment to be replaced with platform-eligible ILR, SDD or long-term passive devices (including equipping sites with a larger equipment)		Existing sites with (non)functional and/or obsolete PQS equipment to be replaced with platform-eligible ILR, SDD or long-term passive devices (including equipping sites with a larger equipment)		Equipping existing sites with ADDITIONAL pieces of equipment for new vaccine introduction and/or to serve an increasing population		Equipping previously unequipped sites (providing immunisation services or not, including existing sites without active devices) and add new service sites	
No of Equipment	*No of sites*	*No of Equipment*	*No of sites*	*No of Equipment*	*No of sites*	*No of Equipment*	*No of sites*
		240	240	23	23		
Total	***Total***	**240**	**240**	**23**	**23**		

A total of 263 equipment will be procured in 2021 for service points, some localities and three states.

14. Ongoing or planned activities around other supply chain fundamentals in the scale-up support phase	
In this section, linkages must be drawn between requested CCE Optimisation Platform support, on-going Gavi investments (especially through the Health Systems Strengthening support) and other partner supply chain support. *Describe planned or ongoing activities related to other supply chain fundamentals during the scale-up support phase, including their sources of funding. Responses to this section should be linked to the EVM Improvement Plan.*	

Supply chain managers
Describe all planned or ongoing activities related to improving the availability and performance of supply chain managers, their sources of funding, and partner support.
	Taking into consideration the different recommendations of the supervisory visits, evaluations meetings, and specifically those of the EVM, the program is implementing and planning to implement certain measures and activities on all levels to improve the performance of the cold chain managers which are:
	• To ensure that all sub-national levels have supply chain managers on job.
	• Capacity building of cold chain mangers on Immunization supply chain management specialized courses:
	  ○ Cold chain and vaccine management
	  ○ Logistics management
	  ○ Information system and monitoring, etc
	Funding of the mentioned activities will be supported by the Government, Gavi HSS, and partners mainly UNICEF and WHO.

Data for supply chain management *Describe all planned or ongoing activities related to data for management, their sources of funding, and partner support. In particular, provide information explaining how improvements to the functionality of logistics management systems will improve the visibility of up-to-date and accurate vaccine stock records at each level of the vaccine supply chain.*	▪ Printing and distribution of revised the vaccine stocks records and temperature forms for all levels. ▪ The expansion of the use of the Vaccine Stock Supply Management (VSSM) software system to all sub-national level. Installation of the software and training of staff on the new computerized system (EVM recommendation) ▪ Verification of data completeness, accuracy and quality would be carried out during routine supervision visits (Included in the cold chain supervision check list) ▪ Training of the related personnel on data management and reporting ▪ Update and print of the required stock records, cards, etc and tools for all levels (EVM IP). ▪ Follow up information and supervisory visits will strengthen the supply chain monitoring and information system in all its

	aspects, this will improve among others, the vaccine management practices and the visibility of up-to-date and accurate stock records at all levels of the supply chain. The funding of the mentioned activities will be supported by the Government, Gavi HSS, and partners mainly UNICEF and WHO.
Optimised, efficient design of distribution system *Describe all planned or ongoing activities related to distribution system design optimisation, their sources of funding, and partner support.*	Integration of refrigerated vehicles for vaccine supply distribution between the central and sub-national levels is under study; this will improve distribution efficiency, and downstream impacts on vaccine availability and quality at the lower levels. The related cost could be covered by the Government and partners (This is expected to reduce the current expenses used for contractual agreements for vaccines transportation by private companies) Freeze indicators are used with all vaccine shipments and the status of the indicator is recorded and monitored in issuing and receiving vouchers. Distribution contingency plan, with all drivers knowing what to do in case of emergencies will be monitored. Strengthen the distribution monitoring system in all states (EVM 2016, recommendation) by providing tools and training to the related cold chain staff. Activities for Vaccine temperature monitoring during transportation for different zones of the country during different climate conditions to assure potency of the vaccines during transportation will continue. The funding of the mentioned activities will be supported by the Government, Gavi HSS, and partners mainly UNICEF and WHO.
Continuous improvement process *Describe all planned or ongoing activities related to continuous improvement processes, their sources of funding, and partner support.*	The immunization supply chain improvement is a continuous ongoing process as part of the immunization programme and health system strengthening. The recommendations of the cold chain and vaccine management assessments and evaluation will be considered.

	Improvement plans of the cold chain and vaccine management at different levels will be prepared and implemented. Capacity building on vaccine management and training of cold chain technicians is a continuous activity and will be implemented every year. The funding of the mentioned activities will be supported by the Government, Gavi HSS, and partners mainly UNICEF and WHO.
Temperature monitoring *Describe how the temperature monitoring system will evolve? Which devices will be used?* *Furthermore, describe which measures are in place to* *a) obtain temperature data from the various devices;* *b) act following temperature alarms (curative maintenance);* *c) in case of RTM devices, please elaborate on SOPs for each responder in the temperature monitoring system; and* *d) countries wishing to purchase such devices are required to demonstrate how the recurrent costs, such as HR, data transmission, analysis etc., will be covered in this section.*	**Temperature monitoring system** is planned to be strengthen at all levels. New technologies for temperature monitoring are under process of installation in all cold rooms at all levels and will be functional at all levels by August 2019. System for recording, reporting and action taking will be improved through the use of continuous temperature monitoring devices such as Fridge Tags which are in use at moment. RTM devices has been procured and will be installed in all WICR in the localities. This will be supported by WHO. **Data from various devices** will be recorded on specific temperature recording forms, analysed and reported. Supply chain staff are trained/will be trained on various temperature devices and interpretation. **SOPs for temperature alarms** are already in place. Alarm events and action taken are recorded on the forms. The immunization supply chain staff are trained to act and respond to the cause of the temperature alarms accordingly, if the situation is beyond their capacity, it will be reported to the EPI manager immediately for further action. **At the National central level**, continuous 24 hours electronic computerized temperature monitoring and system recording with SMS alarming connected to the responsible manager's mobile phones (Model mentioned above). SOPs for actions are in place, immediate actions are taken if required as a response for any alarm *(EVM 2016, D0c # 8-P24).* **30 DTR Temperature monitoring** devices are in use in all service points. This will assist to monitor functionality of the cold chain equipment. Procurement and replacement for 30DTR is a continuous process to monitor the performance of the equipment. This will be

	done through HSS funds and government resources. **Vaccine transportation** through the use of freeze indicators (Freeze tags) with technical and financial support from UNICEF, is in place. **The human resources** responsible for the iSC will be trained on data recording, monitoring, analysis and reporting. **Various costs** for this technology will be planned to be covered by the Government and partners (UNICEF, Gavi HSS and WHO).

PART F: BUDGET TEMPLATES

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

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

Budgets must be completed in the attached budget template, and with reference to the ***CCE Optimisation Platform Guidelines, Gavi CCE Optimisation Platform Technology Guide and CCE planning prices and Total Cost of Ownership (TCO) analysis tool.***

15. CCE Optimisation Platform - Budget Template

*To be filled by **ALL** countries after selection of equipment that best suit their CCE needs (e.g. specific model and make).*

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

Planning price ranges are provided in this template.

How to fill the attached budget template: Countries should:

- *Select appropriate 'Equipment Model' against the listed equipment types*
- *Fill out the 'Estimated service bundle cost' and 'Number of equipment' requested*
- *(In the last 'Total CCE OP Request' table), fill out second and third preference for each model selected. The second and third preference should be comparable products in the same capacity segment.* **Countries are informed that Gavi, and its Alliance partners principally UNICEF, will try as much as possible to respond to countries' first preference, but manufacturers' lead time could also lead to countries receiving cost estimates for either their second or third preference.**

Completed budget template should be sent as an attachment along with application form.

Budgeting for Buffer and Procurement fees

- *Buffer fees: A 7% buffer on **total equipment cost** is built into country yearly budgets. This will cover currency variations, demurrage and associated costs and will be returned to country, if unused.*
- *Procurement fees: Countries will also need to **pay UNICEF's procurement costs for the country joint investment portion**, estimated to be up to 8.5%. Please obtain actual amounts from the UNICEF country office.*

PART G: PERFORMANCE FRAMEWORK

Countries must include **CCE Optimisation Platform indicators** in the application. The indicators need to be included in the Performance Framework for the current and/or proposed Gavi HSS support, after Platform proposal approval.

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

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

16. Indicator monitoring and reporting requirements
*As a **minimum**, countries need to monitor and report on:* • ***5 MANDATORY intermediate results indicators;*** • ***1 MANDATORY intermediate result indicators <u>if countries are procuring User independent freeze protected cold boxes and vaccine carriers;</u> and*** • ***1 to 3 ADDITIONAL intermediate results indicator(s).***
1) ***CCE Replacement/Rehabilitation in existing equipped sites**: Percentage of existing sites with (non)functional and/or obsolete non-PQS and PQS equipment to be replaced with platform-eligible ILR, SDD or long-term passive devices (including equipping sites with a larger equipment)* *2)* ***CCE Expansion in existing sites:** Percentage of existing sites being equipped with ADDITIONAL pieces of equipment for new vaccine introduction and/or to serve an increasing population;* ***3. CCE Extension in unequipped existing and in new sites:** Percentage of previously unequipped sites (providing immunisation services or not, including existing sites without active devices) and new service sites being equipped with Platform eligible equipment.* ***4. CCE maintenance:** Well-defined indicator proposed by country to reflect appropriate maintenance of equipment; for example percentage of equipped facilities with functioning cold chain,[8] such as demonstrated by remote temperature monitoring; **and***

[8] **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

3) ***5. Freeze-free to non-freeze-free carrier ratio:*** *Ratio of freeze-free cold boxes/carriers to non-freeze-free cold boxes/carriers in-country?*

USE THE TABLE BELOW TO COMPLETE MANDATORY INDICATORS (please note that indicators should be cumulative, where appropriate)

Indicator *(Provide name of the mandatory indicator as shown above)*	***Definition*** *(Provide definition if not already specified)*	***Data Source*** *(identify data source)*	***Reporting frequency*** *(annual, semi-annual, quarterly etc.)*	***Baseline (Year)*** *(Provide numerator and denominator for calculating percentage)*	***Target Year 1*** *(Provide numerator and denominator for calculating percentage)*	***Target Year 2*** *(Provide numerator and denominator for calculating percentage)*	***Target Year 3 (If applicable)*** *(Provide numerator and denominator for calculating percentage)*
1. ***CCE Replacement/rehabilitation in existing Equipped sites***	*Percentage of existing sites with (non)functional and/or obsolete non-PQS and PQS equipment to be replaced with platform-eligible ILR, SDD or long-term passive devices (including equipping sites with a larger equipment)*	*-Cold Chain Inventory report & gap analysis tool data.* *-Cold chain information system report/ EPI annual report*	*Annual*	*Numerator = 0* *Denominator= 0* *Percentage= 100%*	*Numerator = 0* *Denominator= 162* *Percentage= 100%*	*Numerator = 162* *Denominator= 162* *Percentage= 100%*	*Numerator = 402* *Denominator= 402* *Percentage= 100%*
2. ***CCE expansion in existing equipped sites:***	*Percentage of existing sites being equipped with ADDITIONAL*	*-Cold Chain Inventory report & gap analysis tool data.* *-Cold chain*	*Annual*	*Numerator = 0* *Denominator= 0* *Percentage= 0%*	*Numerator = 0* *Denominator= 94* *Percentage= 0%*	*Numerator = 94* *Denominator=94* *Percentage= 100%*	*Numerator = 117* *Denominator=117* *Percentage= 100%*

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.

	pieces of equipment for new vaccine introduction and/or to serve an increasing population;	*information system report/ EPI annual report*				*Note: Two sites will receive two CCE each hence 94 instead of 96)*	

Indicator *(Provide name of the mandatory indicator as shown above)*	***Definition*** *(Provide definition if not already specified)*	***Data Source*** *(identify data source)*	***Reporting frequency*** *(annual, semi-annual, quarterly etc.)*	***Baseline (Year)*** *(Provide numerator and denominator for calculating percentage)*	***Target Year 1*** *(Provide numerator and denominator for calculating percentage)*	***Target Year 2*** *(Provide numerator and denominator for calculating percentage)*	***Target Year 3 (If applicable)*** *(Provide numerator and denominator for calculating percentage)*
3. CCE extension in unequipped existing and/or new sites:	*Percentage of previously unequipped sites (providing immunisation services or not, including existing sites without active devices) and new service sites being equipped with Platform eligible equipment.*	*-Cold Chain Inventory report & gap analysis tool data.* *-Cold chain information system report/ EPI annual report*	*Annual*	*Numerator = 0* *Denominator= 400* *Percentage= 0%*	*Numerator = 400* *Denominator=400* *Percentage=100%*	*Numerator = 400* *Denominator=400* *Percentage=100%*	*Numerator = 400* *Denominator=400* *Percentage=100%*
4. ***CCE maintenance***	*Functionality of the cold chain (Percentage of functioning cold chain equipment at all levels out of the total CCE)* *Numerator = number of functioning CCE (per month)* *Denominator = Total number CCE (per*	*-Cold chain information system report/ EPI annual report*	*Annual*	*Numerator = 2,760** *Denominator= 3,424* *Percentage= 81%* **(includes 29 WICRWIFR)*	*Numerator = 3,160* *Denominator= 3,824* *Percentage= 83%*	*Numerator = 3,418* *Denominator= 3,920* *Percentage= 87%*	*Numerator = 3,681* *Denominator= 3,964* *Percentage= 93%*

	month).						
5. ***Freeze-free to non-freeze-free carrier ratio***	*Ratio of freeze-free cold boxes/carriers to non-freeze-free cold boxes/carriers in-country*	*Cold chain information system report/ EPI annual report*	*Annual*	*Freeze-free = 0* *Non- freeze free= 10,512* *Ratio=0:0*	*Freeze-free = 0* *Non- freeze free= 10,512* *Ratio=0:0*	*Freeze-free = 100* *Non- freeze free= 10,512* *Ratio= 1:105*	*Freeze-free = 100* *Non- freeze free= 10,512* *Ratio= 1:105*

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

Examples *of additional intermediate results indicators options 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;*
    a. *Stocked according to plan: Percentage of facilities/stores/districts that have stocks levels between set minimum and maximum stock levels;*
5. ***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;*
6. *Rate of health facilities dashboard use, timely analysis and use for decision making;*
7. ***On-time and in-full (OTIF) delivery****: Ratio of order completely delivered on time;* ***or***
8. *Number of health managers trained and despatched for supply chain oversight function and rate of reported monitoring activities.*

USE THE TABLE BELOW TO COMPLETE ADDITIONAL INDICATORS

Indicator *(Provide name of the* ***additional***	***Definition*** *(Provide definition if not already specified)*	***Data Source*** *(identify data source)*	***Reporting frequency*** *(annual, semi-annual,*	***Baseline (Year)*** *(Provide numerator and denominator for*	***Target Year 1*** *(Provide numerator and denominator for calculating*	***Target Year 2*** *(Provide numerator and denominator for*	***Target Year 3 (If applicable)*** *(Provide numerator and denominator*

indicators as shown above)			*quarterly etc.)*	*calculating percentage)*	*percentage)*	*calculating percentage)*	*for calculating percentage)*
1. Temperature alarms	*Percentage of localities reporting temperature alarm (heat and/or freezing)* ***Numerator =*** *Number of localities reporting* ***Denominator=*** *Total number of districts*	*Temperature review reports*	*Quarterly*	*Numerator = 0* *Denominator= 183* *Percentage=0%*	*Numerator = 137* *Denominator=183* *Percentage=75%*	*Numerator = 155* *Denominator=183* *Percentage=85%*	*Numerator = 183* *Denominator=183* *Percentage=100%*
Add more indicators HERE if needed.							

PART H: PROJECT MANAGEMENT

The effective and successful implementation of the CCEOP relies heavily on the in-country project management team (PMT) which needs someone to manage the PMT. This project manager, designated by the MoH, will have to:

- Establish the Project Management Team (refer to UNICEF's Project Management Support Package for ToRs)
- Coordinate the planning, rollout and monitoring of the CCE OP
- Mobilise the required resources for the project
- Provide status updates to the NLWG
- Coordinate with all stakeholders including the vendor and UNICEF
- Report on deviations
- Managing risks

17. Project Management

The country is asked to please provide the following information:

a) Name and contact details of the dedicated project manager designated by the MoH

b) Describe how the project manager will be empowered and supported to ensure the smooth implementation of CCE OP

a) Project Manager details are presented below:

i. First and last Name: **Seddig Wahaballa**

ii. Title: **EPI Manager**

iii. Department/Direction: **EPI**

iv. E-mail : **<seddig75@yahoo.com>**

v. Cell phone: **+249 125103335**

b) The Project Manager is a senior member of the Federal Ministry of Health and EPI manager for the Sudan and has been designated by the Ministry of Health to oversee the implementation of the Gavi CCEOP support. He will be assisted by the National EPI Logistics Officer on some technical issues relating to cold chain.

The Project Manager and other members of the PMT will be briefed on their roles and responsibilities on the implementation of the activities as outlined in the terms of reference. This will be in line with the Gavi CCEOP Operational Deployment Plan guidelines. All partners will provide technical support to ensure that the activities are conducted as planned.

As a Manager, he will be responsible to ensure that right tools are developed for standard installation of equipment, deviation reporting and readiness assessment forms.

Table 13: CCEOP Budget 2019-2021

Equipment model	Equipment make	Vaccine capacity (L)	Freezer gross volume (L)	PQS indicative equipment unit price $US	Estimated service bundle cost $US	Total unit cost including service bundle cost $US	Total number of equipment	Total amount $US
TCW 4000 AC	B Medical	240	0	4,040	1,350	5,390	110	592,882
TCW2043 SDD	B Medical	70	42	9,137	2,150	11,287	151	1,704,331
VLS 064 RF AC	Vestfrost	53	5	2,685	1,350	2,685	355	953,189
VLS 056 SDD	Vestfrost	36	34	5,415	2,150	7,565	256	1,936,691
TCW 40 SDD	B Medical	0	64	5,912	2,150	8,062	26	209,624
TFW 800	B Medical	-	290	2,888	1,350	4,238	23	97,485
Vaccine Carriers	Aucma	5	-	2,393	300	2,693	100	269,300
Total Equipment Budget								5,763,503
Country Joint Investment % (20% or 50%) Enter %								50%
Country Equipment Budget								2,881,752
Gavi Equipment Budget								2,881,752
Total Budget (Incl. 6% Additional Buffer)								6,109,313
Total Country Budget (Incl. 6% Additional Buffer)								3,054,657
Total Gavi Budget (Incl. 6% Additional Buffer)								3,054,657
Procurement Fees as % of Country Joint Investment Budget Per UNICEF (estimated to be up to 8.5%)								8%
Estimated Country Joint Investment Procurement Fees $US								244,373

Table 14: Summary of CCEOP Support by ISC Level and Year

ISCL	Year	TCW 4000	TCW 2043	VLS 064	VLS 056	TCW40	TFW 800	Vac carrier	Total
Service Point	2019	0	93	113	194	0	0	0	400
	2020	0	0	155	7	0	0	100	262
	2021	0	43	87	55	0	0	0	185
Locality	2019	0	0	0	0	0	0	0	0
	2020	68	0	0	0	26	0	0	94
	2021	40	15	0	0	0	20	0	75
State	2019	0	0	0	0	0	0	0	0
	2020	2	0	0	0	0	0	0	2
	2021	0	0	0	0	0	3	0	3
Total		110	151	355	256	26	23	100	1021