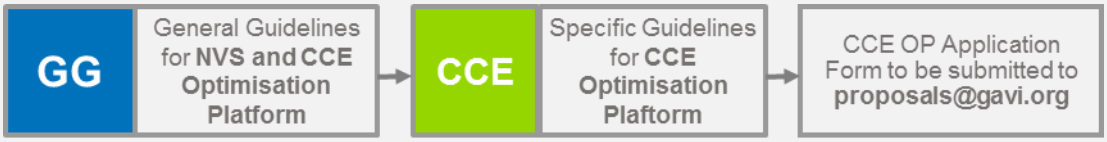
Application Form for
Cold Chain Equipment Optimisation Platform
Support in May-June 2017 only

Document Dated: April 2017

Application documents for 2017:

Countries applying for Gavi Cold Chain Equipment (CCE) Optimisation Platform support in 2017 are advised to refer to the following documents in the order presented below:



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 first read the General Guidelines for all types of support, followed by the CCE Optimisation Platform guidelines. 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 Support webpage: www.gavi.org/support/apply. 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	Papua New Guinea	
Date	1st September 2017	
Contact name	Mr Johnnie Arava	
Email address	jonniearava4388@gmail.com	
Phone number	(+675) 301 3723	
Total funding requested from CCE Optimisation Platform **(US $)**	*This should correspond exactly to the budget requested in the embedded template.* **US $ 2,148,247**	
Does your country have an approved Gavi HSS support on-going?	Yes ☑	No ☐
	*Indicate the anticipated **final year** of the HSS 2 : 2018*	
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 2018***	
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 2020***	
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: Signature: Date:	**Minister of Finance (or delegated authority)** Name: 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			
2	Minutes of the Coordination Forum meeting (ICC, HSCC or equivalent) endorsing the proposal[1]	Yes			
3	National Health Sector Development Plan	Yes			
4	cMYP	Yes			
5	EVM Assessment	Yes			
6	EVM Improvement Plan	Yes			
7	EVM Annual Work plan **and** Progress Report on EVM Improvement Plan[2]	Yes			
8	WHO CCEI Tool/UNICEF IMT/PATH CCEM Tool/CHAI tool[3,4]	Yes			
9	Inventory Report and Facilities segmentation	Yes			
10	Single document: Chapter 1: Cold Chain Rehabilitation and Expansion Plan Chapter 2: Projected Coverage and Equity Improvements Chapter 3: Strategic Deployment Plan Chapter 4: Equipment Selection	Yes			
11	Maintenance Plan with financing and source(s)	Yes			
12	Proof of status for CCE tariff exemptions waiver	Yes			
13	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			
14	Minutes of the Coordination Forum meetings from the past 12 months before the proposal	yes			
15	Other relevant documents				

[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.

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 National Health Plan (NHP 2011-2020) and the Comprehensive Multi-Year Plan (cMYP) both aim to improve child survival by increasing coverage of childhood immunization in all provinces (Page 25 NHP). The cMYP estimates the annual population growth at 3.1% (page 9); HPV and Rota vaccines introduction is scheduled in 2018 and 2019, respectively (page7) and sets a target for 95% Penta 3 coverage by 2020 (page 55). According to NDoH administrative coverage, Penta 3 coverage was 57% in 2016 and on an average 45% of all districts in PNG have reported <50% Penta3 and measles coverage (2016 NDoH EPI data). Immunization services are provided through a network of health facilities through static and outreach strategies; 30% of children are reached through outreach and mobile services (page 36 cMYP). The weaknesses in the immunization system are many (pages 51-54 cMYP) but the key ones could be: timely disbursement of public funds, supply chain, effective management of vaccines, cold chain maintenance, access, lack of adequate quality and quantity of human resources and probably issues on the demand side.

- The immunization supply chain is a 4-tier system in PNG. The EVMA 2016 highlighted that none out of the 9 criteria reached the required 80% score (page 24). Specifically the EVMA (Page 9) indicated the following weaknesses: no temperature monitoring, insufficient storage capacity at all levels, no contingency plan for maintenance (preventative and corrective), facilities under-equipped, outdated technologies, unavailability of spare parts locally and under-skilled staff.
- The 2016 cIP described the following PNG improvements to address the CC weaknesses: update the equipment inventory, estimate cold chain capacity gaps, procure PQS equipment for replacement at provincial, district and health facilities including cold boxes; procure and deploy temperature monitoring devices (30 DTRs), develop CC and logistic manual, update regularly CCE inventory, establish a planned preventive and corrective maintenance including outsourcing, and staff training.
- The government of PNG has undertaken some efforts with support from partners and Gavi HSS to address some of these challenges. The CCE rehabilitation and expansion plan has been formulated based on the 2017 CC inventory, taking into account, the impact of the population growth plus new vaccines introduction on the storage needs. Under this plan, CCE extension is intended to equip 30 more districts and 86 more health facilities that are currently having no CCE by 2020.
- There is a total of 1,023 CCE as per the 2017 CC inventory. 74% of health facilities are not connected with reliable grid electricity. Out of the 1,023 refrigerators, 515 were inventoried as PQS compliant (50.3% of the recorded), while 49.6% are PQS non-compliant. 59% of the population are currently being served by health facilities hosting the non-PQS and obsolete CCE technology.

	Initial Phase		**Scale-up Phase**	
	Years 1 and 2		**Year 3**	
	# of equipment	**# of sites**	**# of equipment**	**# of sites**
Replacement/rehabilitation	117	114	0	0
Expansion	105	85	101	69
Extension	74	70	46	46
Total	**296**	**269**	**147**	**115**

Through this application, PNG is requesting a total of 443 units of CCE (134 ILR for provincial, district stores and electrified health facilities; 40 freezers for on grid provincial & district stores; 269 Solar Direct Drive (SDD) refrigerators for off-grid district and health facilities) at a total cost of **$2,148,247** (including distribution, training and installation costs) for a 27 months duration (October 2018 to December 2020). PNG shall co-finance **50%** equal to **$1,165,423** (**$1,074,123+$91,300 procurement fee**) of this amount through funding obtained from the PSR. The new equipment is easier to be maintained and will decrease PNG operational and maintenance costs, as well as supporting the country to increase immunization coverage targeting the districts currently underperforming.

PNG plans to improve CCE maintenance by incorporating CCE maintenance to the existing 22 bio-

medical workshops located in provincial hospitals across the country. These workshops exist with equipment, biomedical engineers and technicians to oversee repair and maintenance for other medical equipment. NDoH has identified resources and capacity needs at these workshops to empower them to effectively cover EPI CCE maintenance needs in the respective provinces and districts of coverage.
Through CCEM inventory tool, a list of old and obsolete equipment shall be generated for each facility and district. Disposal of obsolete equipment will be conducted as per the National Policy of Medical Equipment for PNG. This policy, in section 3.5 states that the **"replacement and disposal will be executed in accordance with authorized operating procedures and the equipment item removed from both clinical area of use and the national medical equipment inventory."** (Page 12 of the attached policy).

The NDoH has a monitoring and evaluation officer dedicated to the health section to track progress of key activities and indicators among others. CCE related indicators are tracked on a bi-annual or annual basis. PNG currently tracks 3 CCE related indicators. These include;

- Proportion of immunizing health facilities that have a functional EPI refrigerator.
- Number of facilities with sufficient storage capacity.
- Proportion of functional cold chain equipment.

Data is collected through health assessments (cold chain inventories, cold chain updates), and on-site assessments of equipment following support supervision, repair and maintenance activities.

In addition to the above, the country also tracks EVM indicators detailed in the EVM improvement plan to track progress on the implementation of key recommendations. These revolve around the 9 EVM criteria. These indicators are also reviewed on an annual basis.

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 decision to apply for CCEOP application was first discussed during the ICC meeting that took place on the 12th May, 2017 (minutes attached). Partners involved were DFAT, OSF, UNICEF, WHO, NDOH, the Paediatric Society and the Obstetric Society. The CCEOP proposal was developed by NDoH in close collaboration with development partners, as part of the broader CEF/PSR. The CCEOP application has been endorsed by the ICC held on 27th July 2017 and finally approved by the NDoH Senior Executive Management on 28th July 2017.

The National Logistic Working Group (NLWG) is to be established in the country, hence ICC is the sole forum to coordinate such process in the country for the time being. PNG has a plan to establish a NLWG to systematically improve the immunization supply chain and coordinating

partner's support, including the CCEOP implementation. Once constituted, the NLWG will act as the CCEOP project management team. The ICC will also be overseeing the overall implementation process of the CCEOP plan in PNG.

The ICC Attendance, minutes and endorsement signatures are attached, as well as the draft terms of reference of the NLWG.

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:

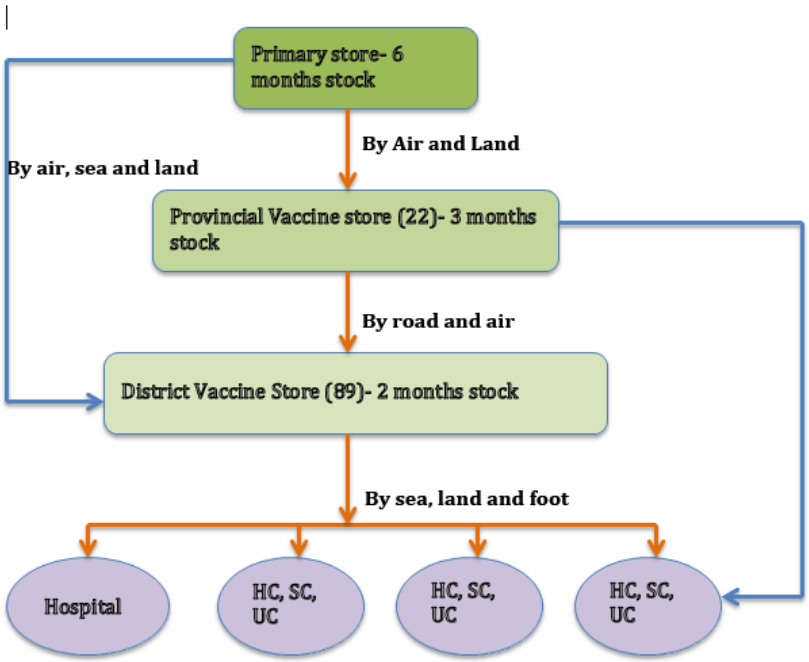
a) *How is the country's immunisation supply chain administered?*
b) *What weaknesses have been identified in the country's supply chain?*
c) *Through what interventions are these weaknesses currently being addressed?*
d) *Describe challenges that are hindering the implementation of these interventions.*
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?*

a) Country's immunisation supply chain administration

The NDOH/EPI is responsible for policy, standards and guidelines setting; capacity building, procurement and distribution of major inputs (vaccines, injection materials, cold chain equipment and other related supplies).

There are 22 Provincial Cold Chain & Logistic Officers (PCCLO) and 8 Districts Cold Chain & logistic officers who are in-charge of the provincial & district vaccine stores and who are also responsible for repair and maintenance of CCE at provincial, district and health facilities stores in their respective provinces.

There are four supply chain levels used in PNG: Primary (National), Sub-national (Province), Lower distribution level (Districts) and Service Delivery (Health center). All shipments arrive at the national vaccine store housed in the Area Medical Store (Central Medical store) in Badili, Port Moresby. The National vaccine store (NVS) receives its supplies through UNICEF and local supply procurement mechanism.



a) Weaknesses of PNG immunization supply chain (2017 CC Inventory):

- Out of the 89 districts, only 9% (8) had vaccine storage facilities.
- The total net storage capacity in primary store is 29.89 m³ (+2°C to +8°C), sufficient for the 2017 vaccine storage requirements, but insufficient for the introduction of new vaccines.
- The preventive and corrective maintenance are inadequate at all levels of the supply chain in the country (2016 EVMA).
- **74%** of facilities have no access to grid electricity
- Gas is the most commonly used energy source (40% of all CCEs). Procurement of gas is costly and decentralized to provinces, but funding is inadequate leading to frequent gas stock outs in the health facilities.
- In terms of age, **522** refrigerators and freezers are more than 10 years old; **342** are aged between 6 and 10 years**; 159** are between 1 and 5 years.
- Out of 1023 refrigerators 50% are PQS non-compliant.

b) Current interventions addressing the weaknesses:

In 2015, the NDoH made various efforts to improve the vaccine supply chain by investing in newer technologies and expanding CCE at facilities that previously had none. Through DFAT funding and other development partners (UNICEF and WHO), NDoH procured cold chain equipment for

national, province and facility level (282 fridges of which 195 were SDDs, 7 cold rooms (10M^3) for provinces and tool kits for CCE maintenance).

The 2016 CIP described the following PNG improvements to address the CC weaknesses: update the equipment inventory, estimate the cold chain capacity gap, procure GAVI compliant new equipment for replacement at provincial, district and health facilities including cold boxes; install the existing temperature monitoring devices, procure 30 DTRs, develop CC and logistic manual, update regularly CCE inventory, establish a planned preventive and corrective maintenance including outsourcing, and staff training.

Training of the 22 Provincial Cold Chain Logistics Officers (PCCLO) on Cold chain and vaccine management has been completed and basic CCE maintenance toolkits have been provided to all the 22 PCCLO's with support from UNICEF. 89 EPI focal persons located in the districts will also be trained under the same UNICEF initiative in 2017.

c) Challenges that are hindering the implementation of these interventions:

- PNG rough geography, with service delivery facilities located in hills, mountains, across rivers, in islands regions, most often not reachable by road and leading to costly transportation of immunization supplies (helicopters, boats, canoes, by foot).
- Lack of locally available spare parts to conduct regular CCE maintenance.
- The trained staff are not qualified cold chain technician and unable to perform major repairs. Irregular support supervision and on job training in most facilities by the Provincial/district teams.
- Inadequate funding for all the components of the supply chain system.

d) Lessons learnt from the recent supply chain related support:

PNG geographical complexity requires that transportation costs of CCE have to be factored in for in country deployment when budgeting (CCE procured in 2015 did not include transportation costs and has been delivered to the provinces only in 2017). The uptake of SDD technology installed recently has showed a reduction of maintenance needs and costs.

e) Percentage of facilities which have reliable access to grid electricity:

26% of 920 storage facilities have currently access to reliable grid electricity. Out of 808 health centres/health posts, only 187 have access to grid electricity.

Facility type	Reliable grid electricity (>8h)	Unreliable grid electricity (<8h)	Total by facility type
National store	1	0	1
Provincial store	22	0	22
District store	39	50	89
Health facility store	187	621	808
Total by grid electricity	**249**	**671**	**920**

f) Quantity and percentage of current CCE that is: a) functional; b) PQS-approved; c) non-PQS-approved; and/or d) obsolete:

84% of the existing CCE (1,023) were functional, 50% (515) refrigerators and freezers inventoried were PQS compliant while 50% are PQS non-compliant. **522** refrigerators and freezers are more than 10 years old (see page 24 2017 CCE Inventory)

g) Percentage of the birth cohort is served by effectively functioning, PQS-approved CCE currently:

There is 41% of the 2017 birth cohort currently served by the PQS approved CCE in the country (excluding the equipment at national, provincial & existing district stores). (See page 10 2017 CCE Inventory)

h) Bottlenecks that CCE can address in the current supply chain set-up (for example, capacity and technology constraints):

As seen from above information, the CCEOP application can address the needs of cold chain

equipment in the country to fulfil cold chain capacity gaps and replace non PQS equipment (gas fridges) which have really been a bottleneck in terms of managing cold chain. The fuel costs of gas fridges are as high as $561 per unit per year (page 29 in 2017 CCE Inventory) and with this investment including investment for RTM, the maintenance costs are expected to come down as well as increased confidence in cold chain temperature monitoring and maintenance.

i) Other supply chain challenges that CCE Optimisation Platform support will assist in mitigating:

The EVM assessment, the 2017 CC Inventory findings, and coverage and equity analysis conclude that the following key strategic and operational measures are required:

- ✓ Physical and operational expansion of the supply chain to accommodate new vaccines. By 2019, the number of vaccine doses/FIC will increase, and vaccine cold chain volume per fully immunized child will increase from 109.2cm³ to 178.9cm³ at peripheral stores due to introduction of HPV and Rota, which will bring tremendous storage load to all levels of the supply chain.
- ✓ Strategic shift to new technology from the absorption (gas) and solar battery technology to SDD will reduce the total cost of ownership and human resources requirements, while ensuring the vaccine potency. CCEOP support will save $1.04 million in the period of 2018-2020 (refer rehabilitation and expansion plan, page-21).
- ✓ End-to-End quality assurance of vaccines through considerably improved temperature monitoring and management during both storage and transport and ensure performance-based maintenance of refrigerators that is substantially weak in the country. The CCEOP support will enable the country to invest in RTM and 30DTR up to last mile.
- ✓ Lack of outreach is a persistent challenge contributing to low immunization coverage. The CCEOP support will increase the outreach by bringing the cold chain closer to the community.

j) Overall CCE needs:

As indicated in the Cold chain rehabilitation & expansion plan, PNG is requesting 443 units of refrigerators and freezers (134 ILR for provincial, district stores and electrified health facilities; 40 freezers for on grid province/district stores; 269 SDD refrigerators for off-grid district and health facilities). Spare parts for CCEOP eligible equipment are fridge tags 500 and voltage regulators 174.

Number of equipment by CCE type and expected arrival time:

CCE Model	For SP level 2018	For SP level 2019	For LD level 2018	For LD level 2019	For SN level 2018	For SN level 2019	Total by Type
Solar direct Drive (SDD)	156	93	20				**269**
On-grid ILR			14	19	86	15	**134**
Freezers				3	20	17	**40**
Total CCE by year	**156**	**93**	**34**	**22**	**106**	**32**	**443**

SP-service point, LD -Lower distribution point (District), SN-Sub national store (Province)

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) GAVI support will address identified geographical, gender and socio-economic barriers

PNG is a diverse country with many ethnic groups spread across the 22 provinces; there are large sociocultural differences between and within provinces. The majority of the population (87%) lives in rural areas but the last census was conducted in 2011 and the last DHS in 2006, without recent data on gender and socio-economic disparities. The DHS also showed that coverage is lower in rural areas (65%) than urban areas (79%). The CCEOP will address this barrier by bringing cold chain closer to remote rural communities.

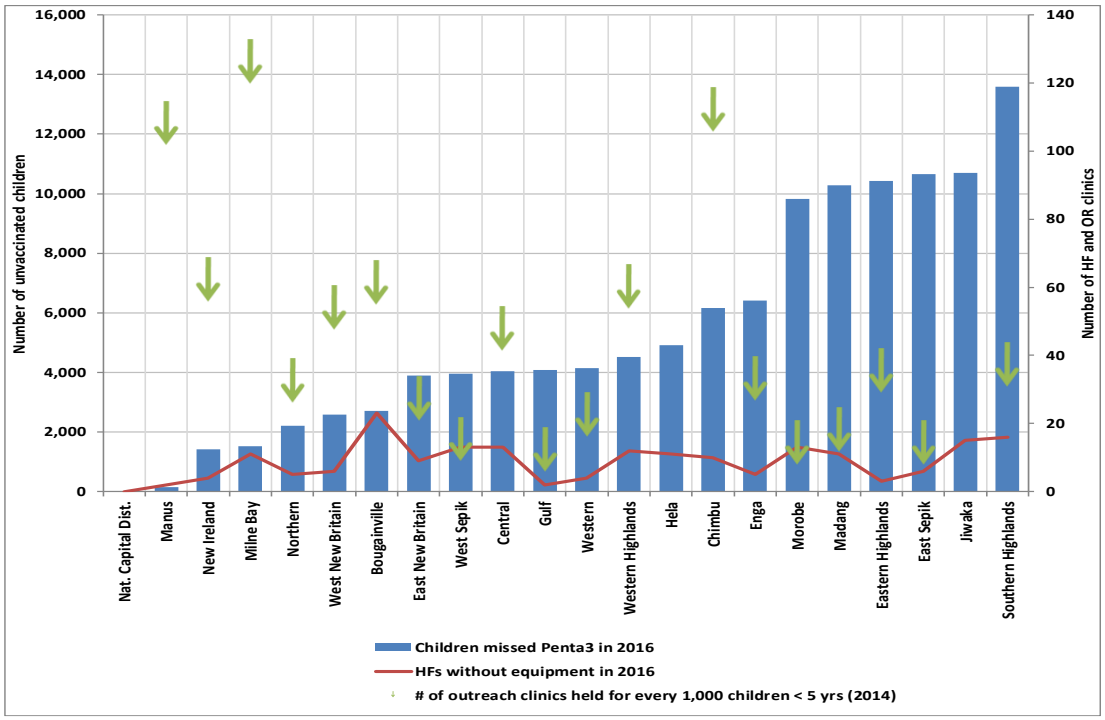
Data from the 2006 DHS showed slightly higher coverage rates among females (55%) than males (50%) and higher coverage the higher the education level of the mother.

The 2017 birth cohort consists of 280,402 live births. Immunization services are currently provided in 756 immunization sites countrywide, while the number of sites not reporting has increased in 2015 and 2016 due to various reasons: communication issues, cold chain, insufficient staffing, inadequate skills and remoteness. Immunization is provided through fixed sessions and outreach (named mobile and patrol in PNG, if overnight is required or not). The number of immunization sessions conducted versus planned has remained stagnant during the last five years (58% of sessions conducted). In terms of outreach, challenges with funding plus the difficult terrain have entailed that the number of outreach sessions organized has remained clearly below the target during the last five years (100 per 1,000 children under five). The WHO/UNICEF coverage estimates in PNG from 1980-2015 indicates a persistently low Penta3 coverage around 60%, while the 2016 administrative coverage for Penta3 was 57%.
The CCEOP support will prioritize the poorest communities in the Highlands and Momase regions, as well as advocating for the immunization of baby boys.

b) Analysis done to optimise the design of the supply chain distribution system.

The 2017 Coverage and Equity analysis showed that, 17 out of the 30 districts having lowest Penta3 coverage (ranging 1-40%) are from the six provinces in Highland regions (see map in page 29 C&E analysis). There are 86 health facilities with none or non-functional CCE in these districts. This indicates that the cold chain capacity of the health facilities in the districts have implications on the final Penta3 coverage in provinces and districts. Among other reasons of low Penta3 coverage, the preliminary data on the number of outreach sessions conducted in 2016 in the provinces remains low (36%). The rate of outreach sessions per province in 2014 shows a direct correlation between low numbers of outreach sessions and high numbers of unvaccinated children (see graph

below with the green arrows representing the outreach). The CCEOP support will address the cold chain component of the outreach.



c) Systems design considerations that impacted the choice of CCE to be supported by the platform.

Based on the 2017 CCE inventory, a number of health facilities were purposefully identified where CCE are non-functional and/or never installed. The rehabilitation and expansion plan were tailored considering such facilities with none and non-functional CCE, merging them with low Penta3 coverage (<50%) at the district level. A priority list of 249 health facilities was identified to optimize their cold chain technology by providing SDD fridges.

For the time being, there has not been an intentional system design other than extending and expanding the CCE capacity up to the last mile, thereby enabling better and more frequent outreach and addressing existing inequities in immunization coverage.

81 district stores in the country are lacking any active CCE and 50 of them are not connected to reliable electricity, forcing their health facilities to collect vaccine supplies from provincial stores. Equipping such district stores with CCE from the platform will enable redesigning the vaccine supply chain in 30 such districts and thereby bringing the lowest delivery stores in close proximity to the service delivery levels, improving vaccines availability in hard to reach facilities (health centres and health posts), therefore increasing the likelihood of immunization sessions and hopefully decreasing drop-out rates. Safety of vaccines will also be guaranteed, as vaccines will be kept in continuously functioning refrigerators compared to current practices where vaccines are kept in fridges that experience frequent supply interruption of gas.

As a result, 152,051 children <1 year in the targeted areas will be brought under cold chain coverage facilitating the storage of vaccines. PNG has a target to reach a Penta3 coverage of 95% by 2020 and CCE rehabilitation, expansion and extension will be one of the key instrument in support of the achievement of the goal.

d) Platform support will help improve the sustainability of the supply chain system.

Platform support, through the introduction of modern solar equipment, will decrease maintenance and human resources requirements of CCE, therefore contributing to the sustainability of the system.

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 Optimization Platform equipment?

a) Management system for maintenance of cold chain

PNG NDoH has an established system of cold chain maintenance with in-house capacity, escalating alerts from the health facility level to the provincial and national level to take action.

Human resources for maintenance and repair:

- **At national level:** Ten national level cold chain technicians oversee cold chain equipment maintenance at the National Vaccine Store as well as provide supportive supervision to all the 22 provinces and 89 districts as and when the need arises. They are competent to conduct major repairs on vaccine refrigerators as well as capacity building of the lower level technicians in key maintenance tasks. During supportive supervision, the national level technicians prioritize facilities with major CCE maintenance issues. There is no dedicated workshop for CCE maintenance and repairs.
- **Provincial level:** The EPI officers or Provincial Cold Chain Logistic Officer (PCCLO) oversee cold chain maintenance and provide basic routine maintenance (minor repairs and preventive) to the district and health facility levels. Both repairs and preventive maintenance are currently limited by the unavailability of spare parts, funding and transport challenges.
- **District and health facility level:** At district level, there is no specific cold chain technician and maintenance is performed by the district EPI officers or PCCLOs. The health facility EPI focal persons/health workers are expected to do simple basic preventive maintenance tasks and report as soon as possible when the equipment breaks down, to the nearest technician.

The challenges described in the current system will be addressed by the platform support and the proposed funded maintenance plan.

Frequency of Preventive and corrective maintenance

Preventive maintenance of cold chain equipment involves minor preventive maintenance done by the users on a weekly and monthly basis at the health facility level. PCCLO conducts visits to districts and health facilities on ad hoc basis to repair and maintain CCE. The technicians from the national level are deployed up to the health facility level to perform major repairs.

The steps taken to strengthen the cold chain maintenance system are:

- The responsibility of CCE maintenance has been allocated to the Health Facility Standards Branch, which maintains all medical equipment.
- NDoH with support from UNICEF/WHO has already trained 22 PCCLO on vaccine management and CCE maintenance and equipped them with basic maintenance toolkits in 2016-17. The NDoH also plans to conduct annual training of provincial bio-medical technicians and districts EPI focal person on Cold Chain Maintenance and Vaccine Management. The programme, together with partners has adopted the WHO standard reference job aids for cold chain equipment preventive maintenance. These job aids will be distributed across the country in every health facility.

Anticipated technical assistance:

To improve access to technicians, NDoH is incorporating CCE maintenance to the existing 22 bio-medical workshops located in provincial hospitals across the country. These workshops exist with equipment, biomedical engineers and technicians to oversee repair and maintenance for other medical equipment. NDoH has identified resources and capacity needs at these workshops to empower them to effectively cover EPI CCE maintenance needs in the respective provinces and districts of coverage. Existing technicians in the 22 workshops will be trained on CCE maintenance and will be equipped (spare parts, tool kits) to facilitate movement to all health facilities with vaccines storage equipment within their catchment area.

b**) Monitoring the completion of preventive and corrective maintenance**

A robust system to monitor the global system functionality will be rolled out, including temperature monitoring using 30DTR in all health facilities across the country. The daily and monthly temperature monitoring reports will be a key reference for tracking CCE functionality status and will be used by both facility users and provincial technicians to plan for required improvements.

Monthly reports aggregated into the CCEM tool will reach the provincial level where the information will be analysed and necessary actions undertaken. Provincial technicians will be visiting each health facility on a quarterly basis and will review temperature monitoring and maintenance reports. The Provincial technicians will be using a supportive supervision checklist for tracking areas acted upon during the visit, and for reporting to the Provincial Cold Chain logistics officer (PCCLO). Job cards detailing the supervision visit will be filled. All this information will be processed as well at the national level.

The Government of PNG has been providing funding to the EPI program on a quarterly basis without a budget line dedicated to CCE maintenance. The redesigning of the maintenance system and its capacity building requires secured funding. Health development partners have played a key role in supporting equipment maintenance by facilitating maintenance works and corrective maintenance activities. PNG EPI has forecasted a budget of CCE maintenance for the 2018-2020 period as follows:

Item	Anticipated cost in USD	Remarks
Spare parts (for existing PQS equipment)	29,575	to be included in CCEOP proposal
Job aids	10,633	
Training of bio-med tech, PCCT & DCCT	107,567	
Transportation and fees for provincial, district CCT for routine and corrective maintenance in 3 years	250,078	Transport costs very high in PNG (flights, helicopters, boats, canoes, labourers)
Grand total for 3 years	397,853	

The high budget line for transportation costs is due to the geographical complexity of PNG, comprising islands; remote health facilities located in hills, mountains and valleys without road access (only accessible by air, river or sea); strong winds and tides limiting the period of the year when some regions are accessible. Even if the CCE human resources maintenance capacity is developed at the provincial and district level, transportation costs will remain high.

The PSR proposal has been jointly developed with the CCEOP proposal, for a total value of 6 million USD and the 50% government co-funding for CCEOP will be coming from the PSR application.

c) Disposal of obsolete and irreparable equipment

Following the CCEOP supported equipment installation; Through CCEM inventory tool, a list of old and obsolete equipment shall be generated for each facility and district. Disposal of obsolete equipment will be conducted as per the National Policy of Medical Equipment for PNG. This policy, in section 3.5 states that the **"replacement and disposal will be executed in accordance with authorized operating procedures and the equipment item removed from both clinical area of use and the national medical equipment inventory."** (Page 12 of the attached policy).

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? Is the country's joint investment secured?

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

a) Coordination with manufacturers:

The NDoH and EPI partners will establish a country coordination team who will oversee and facilitate the process. The country will interact with the supplier and/or representative through UNICEF supply division to ensure that the CCEOP is implemented smoothly. The country will provide the operation deployment plan/information to the manufacturers/ suppliers before the arrival of the equipment in the country. The EPI cold chain technicians/PCCLO will accompany the suppliers' representatives at the time of installation to facilitate the end-users training. Specifically, the country will assist with:

- Completed operational deployment plan (list of facilities, list of users, distances, facility assessment etc., where equipment is to be deployed)
- Number of staff to be trained
- Access to existing storage facilities to temporarily store equipment if necessary
- Entry visas for supplier personnel, provision of contacts at various levels of government
- Safety assurance for supplier team members
- Tracking and monitoring shipment documentation and installation reports
- Joint installation

b) The source of co-funding:

The PSR proposal has been jointly developed with the CCEOP proposal, as part of the CEF process. It is anticipated that the country co-funding of the CCEOP application (50%) is going to be incorporated in the PSR proposal.

c) Tariff exemption:

The government of PNG will facilitate the entire process through the NDoH. Once the shipment documents are available in the country, the secretary of NDoH will contact the ministry of finance to obtain the letters of tariff exemption to clear the CCEOP equipment from Internal Revenue Commission (IRC), the government entity dealing with customs.

There is an attached memorandum referring to PNG tax body (IRC) commitment to provide the tariff exemption for the CCEOP equipment upon arrival.

PART D: INITIAL SUPPORT PHASE

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 Annex 3 of the CCE Optimisation Platform Guidelines, available at www.gavi.org/support/apply/

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'.*

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	Based on the facility segmentation plan, the need is to replace, extend and expand CCE in facilities with none, obsolete equipment and big storage gaps, in terms of existing capacity and considering the introduction of new vaccines. CCE model: TCW 40 SDD — Number of CCE: 44 CCE model: VLS 054 SDD — Number of CCE: 112 Total: 156
Justification	All the equipment under Need #1 will be installed in service points, covering health facilities without CCE, and with non-functional CCE, particularly in districts with the lowest Penta 3 coverage. This will enable the service points to resume regular static and outreach immunization sessions as well as accommodating new vaccine introduction.
Expected outcome	Health facilities will have functional CCE with adequate storage capacity, availability of vaccines in the lowest performing areas.
Total CCE budget	**$ 928,427**
Prioritised (Urgent) CCE Need #2	
The need	Address cold chain capacity needs at the district stores currently having CCE

<table>
<tr><td></td><td>capacity gap, accounting for current immunization schedule and new vaccine introduction by 2019. Extend CC to 30 unequipped district stores that have no reliable grid electricity and 4 unequipped district store having reliable grid electricity.
<table><tr><th>CCE model</th><th>Number of CCE(y1)</th></tr><tr><td>VLS 154 SDD</td><td>20</td></tr><tr><td>VLS 400A Green Line</td><td>14</td></tr><tr><td>Total</td><td>34</td></tr></table></td></tr>
<tr><td>Justification</td><td>Currently, only 8 district stores out of 89 have functional CCE, however these stores have insufficient capacity to accommodate new vaccine introductions. In addition, 30 unequipped district stores have been prioritized for extension of the storage capacity requirements, based on the coverage and equity gaps.</td></tr>
<tr><td>Expected outcome</td><td>34 district stores will have adequate storage capacity to accommodate the current routine immunization schedule and future vaccine introductions. Vaccines will be available in close proximity to the service delivery points, enabling the supply chain to function optimally. An estimated number of 98,563 children will have increased access to immunization sessions.</td></tr>
<tr><td>Total CCE budget</td><td>$ 155,982</td></tr>
<tr><td colspan="2">Prioritised (Urgent) CCE Need #3</td></tr>
<tr><td>The need</td><td>Expand the insufficient cold chain storage and freezing capacity in 20 provincial stores to enable the implementation of current immunization schedule and new vaccine introduction by 2019.
<table><tr><th>CCE model</th><th>Number of CCE</th></tr><tr><td>VLS 400A Green Line</td><td>86</td></tr><tr><td>MF 314</td><td>20</td></tr><tr><td>Fridge-Tag 2</td><td>300</td></tr><tr><td>Voltage regulators model</td><td>120</td></tr><tr><td>Spare parts model</td><td>296</td></tr><tr><td>Total fridges</td><td>106 (only fridges)</td></tr></table></td></tr>
<tr><td>Justification</td><td>- Increase the storage capacity of the provincial stores to reach Penta 3 coverage targets as per the cMYP and to accommodate the new vaccines introduction planned in 2019
- Address ice pack freezing capacity needs in 20 provincial stores to facilitate the vaccine distribution from the provincial level to 77 districts and nearby service points (comprising all the health facilities having access challenges with the districts but cheaper logistic means with the provincial store).</td></tr>
<tr><td>Expected outcome</td><td>Provincial stores will have adequate storage and freezing capacities to accommodate all the required vaccines for the district and health facilities. It is expected to increase Penta 3 coverage by 10% after three years in the 20 provinces.</td></tr>
<tr><td>Total CCE budget</td><td>$ 324,091</td></tr>
<tr><td>GRAND TOTAL CCE BUDGET: (Initial support phase)</td><td>$ 1,408,500</td></tr>
</table>

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. See Section 6.2 of the CCE optimisation Platform Guidelines for the definitions of replacement/rehabilitation, expansion and extension. 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 CCE	*No of sites*	*No of Equip*	*No of sites*	*No of Equip*	*No of sites*	*No of Equip*	*No of sites*
21	18Provinces			32	14provinces	0	0 Provinces
2	2 Districts			4	2 districts	34	30 districts
94	94 H. Facilities			69	69 H. facilities	40	40 H. Facilities
117	***114***			***105***	***85***	***74***	***70***

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 (see section 3.1 of the CCE Optimisation Platform Guidelines) 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.*	a) Since 2016, funded by HSS, UNICEF has been supporting the training of a total of 111 cold chain logistic officers in cold chain and logistics management as per the following breakdown: - (2016) 22 CC officers at the provincial level and - (2017) 89 district CC officers. b) Cold chain maintenance task has been institutionalized and shifted to the Health Facility Standards Branch at NDoH.
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*	Cold chain inventory and maintenance data management at the national vaccine store has been strengthened by upgrading the IT infrastructure in 2017 funded by HSS. NDoH plans to strengthen the maintenance

records at each level of the vaccine supply chain.	systems through the collection and analysis of temperature monitoring data aggregated at the central level.
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.*	The only system design optimisation for the time being remains the replacement of gas CCE by solar driven equipment, plus the ongoing capacity building at the district level.
Continuous improvement process *Describe all planned or ongoing activities related to continuous improvement processes, their sources of funding, and partner support.*	As indicated in the EVM-IP and in order to enhance storage capacity, the procurement of the following equipment are underway during 2017 funded by Gavi HSS2: - 1 cold room for NVS, - 1 freezer room for NVS, - 22 SDD refrigerators, - 750 fridge tag2, - 1 voltage stabilizer for cold room, - 22 generators for provincial stores, - 315 voltage stabilizers, - 266 cold boxes, and - 1,000 vaccine carriers.
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;* *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.*	- PNG has recently procured and installed RTMD at national vaccine store. - 30 DTRs have been deployed to all the provincial stores and temperature monitoring charts are being printed and supplied to sub-national stores to record temperature monitoring data. - Training will be provided to district and HF staff to record and report temperature data/low and high alarms for follow up action. - The country will develop the SOPs for using RTM and CTMD in line with timelines of its introduction.

PART E: SCALE-UP SUPPORT PHASE

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.

CCE	Further information on CCE rehabilitation and expansion plan, equipment selection and strategic deployment plan requirements is provided in Annex 3 of the CCE Optimisation Platform Guidelines, available at www.gavi.org/support/apply/

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	Extend supply chain in 46 health centres and health posts (service delivery levels) currently having no CCE in areas with maximum missed children from Penta3 in 2016, which were not included in the initial phase. Expand the capacity of 46 health facilities to increase the storage volume as per the catchment area.

CCE model	Number of CCE
TCW 40 SDD	36
VLS 054 SDD	57
Total	93

Justification	46 health facilities were identified without any CCE and high number of unimmunized children (low Penta3 coverage) in highland regions and some other provinces. Other 46 health facilities with insufficient vaccine storage to accommodate new vaccines will receive SDD.
Expected outcome	Vaccines will be available in facilities located in hard to reach areas to increase number of immunization sessions and thereby improve the coverage.
Total CCE budget	**$ 580,263**
Prioritised (Additional) CCE Need #2	

<table>
<tr><td>The need</td><td>To extend supply chain in 10 districts that currently have no CCE. To replace non-PQS refrigerator from the 8 district stores. To increase ice pack freezing in 3 district stores.<table><tr><th>CCE model</th><th>Number of CCE</th></tr><tr><td>VLS 400A Green line</td><td>19</td></tr><tr><td>MF 314</td><td>3</td></tr><tr><td>Total</td><td>22</td></tr></table></td></tr>
<tr><td>Justification</td><td>30 unequipped districts were targeted in the initial phase. The scale up looks at expanding the capacity of the 8 districts which already had CCE, so that they can accommodate new vaccines and better support the health facilities nearby.</td></tr>
<tr><td>Expected outcome</td><td>Availability of vaccines in close proximity to health facilities having access challenges previously. Increased number of outreach session by providing coolant packs.</td></tr>
<tr><td>Total CCE budget</td><td>$ 37,958</td></tr>
<tr><td colspan="2">Prioritised (Additional) CCE Need #3</td></tr>
<tr><td>The need</td><td>Expand the storage capacity of 14 provincial vaccine stores to accommodate new vaccines, as well as the new health facilities providing immunization services.<table><tr><th>CCE model</th><th>Number of CCE</th></tr><tr><td>VLS 400A Green Line</td><td>15</td></tr><tr><td>MF 314</td><td>17</td></tr><tr><td>Fridge-Tag 2</td><td>200</td></tr><tr><td>Voltage regulators model</td><td>54</td></tr><tr><td>Spare parts model</td><td>147</td></tr><tr><td>Total (fridges)</td><td>32 (fridges only)</td></tr></table></td></tr>
<tr><td>Justification</td><td>The provincial ice pack freezing capacity will be scaled up to transport vaccines to the districts and nearby health facilities. The total vaccine storage capacity will increase accounting for the introduction of new vaccines expected in 2019.</td></tr>
<tr><td>Expected outcome</td><td>Minimizing the risk of exposure of vaccine to extreme temperature. It is expected that the upgrading of cold chain will contribute to government efforts to increase Penta 3 coverage by 10% nationwide.</td></tr>
<tr><td>Total CCE budget</td><td>$ 121,526</td></tr>
<tr><td>GRAND TOTAL CCE BUDGET: (Scale-up support phase)</td><td>$ 739,747</td></tr>
</table>

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. See Section 6.2 of the CCE optimisation Platform Guidelines for the definitions of replacement/rehabilitation, expansion and extension. 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 Equip	*No of sites*	*No of Equipment*	*No of sites*	*No of Equip*	*No of sites*	*No of Equipment*	*No of sites*
0	0 prov			32	14provinces	0	0provinces
0	0districts			22	8 districts	0	0 districts
0	0 H. F			47	47H. Facilities	46	46H. Facilities
0	***0***	***Total***	***Total***	***101***	***69***	***46***	***46***

14. Ongoing or planned activities around other supply chain fundamentals <u>in the scale-up 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 (see section 3.1 of the CCE Optimisation Platform Guidelines) 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.*	- Cold chain maintenance tasks will continue under the Health Facility Standards Branch at NDoH, funded by PNG government. - UNICEF-PNG government joint country program will continue providing technical assistance on supply chain. - Strengthen planning and delivery of the supply chain component of quality EPI services through the establishment of NLWG, funded by PSR.
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.*	- Continue the efforts on migration on computerized EPI data management system (LMIS, CMTD, RTMD). - Explore with Global Fund mSupply initiative how to integrate data on vaccine supply and management as part of the broader supply chain system.
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.*	- Implement the outsourcing of transport and distribution system of EPI supply based on learnings in 2017-2018 outsourcing trials. - Consider the distances from provincial stores to health facilities and districts to look at the option of distribution hubs or clusters. - Look at integrated distribution of vaccines and other health commodities.
Continuous improvement process *Describe all planned or ongoing activities related to continuous improvement processes, their sources of funding, and partner support.*	- Ongoing efforts by DFAT and other development partners will be considered to build up the supply chain into broader health systems strengthening initiatives. - Strengthen monitoring and supervision of EPI activities including tracking of EVMIP.
Temperature monitoring *Describe how the temperature monitoring system will evolve? Which devices will be used?* *<u>Furthermore, describe which measures are in place to</u>* *a) obtain temperature data from the various devices;* *b) act following temperature alarms (curative*	- 30 DTRs have been deployed to all the provincial stores and temperature monitoring charts are being printed and supplied to sub-national stores to record temperature monitoring data. RTMs have been deployed at the national vaccine store. Rolling out of 30 DTRs to cover all the districts and health facilities, as recommended in the

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.*	2016 EVMA/IP. - As recommended by the UNICEF meeting on temperature monitoring and CC maintenance for sustainable supply chain systems (Copenhagen April 2017), the monthly reporting tools will be updated to capture the high and low alarms in addition to equipment functionality status to generate a dashboard with the above two indicators and accordingly trigger appropriate action.

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.

CCE	Further information on developing relevant indicators, including a list of possible data sources, is provided in Section 7.2 of the CCE Optimisation Platform Guidelines, available at www.gavi.org/support/apply/

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 if countries are procuring User independent freeze protected cold boxes and vaccine carriers; 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,[5] such as demonstrated by remote temperature monitoring; ***and***

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

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) 2017*	***Target Year 1*** *(Provide numerator and denominator for calculating percentage) 2018*	***Target Year 2*** *(Provide numerator and denominator for calculating percentage) 2019*	***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)*	*Updated Inventory Report*	*Annually*	*Numerator = 0 Denominator=114 Percentage=0%*	*Numerator = 15 Denominator=114 Percentage=13%*	*Numerator = 75 Denominator=114 Percentage=66%*	*Numerator = 114 Denominator=114 Percentage=100%*
2. ***CCE expansion in existing equipped sites:***	*Percentage of existing sites being equipped with ADDITIONAL pieces of equipment for new vaccine introduction and/or to serve an increasing population;*	*Updated Inventory Report*	*Annually*	*Numerator = 0 Denominator=154 Percentage=0%*	*Numerator = 15 Denominator=154 Percentage=10%*	*Numerator = 85 Denominator=154 Percentage=55%*	*Numerator = 154 Denominator=154 Percentage=100%*
3.. CCE extension	*Percentage of previously*	*Updated*	*Annually*	*Numerator = 0*	*Numerator = 30*	*Numerator = 70*	*Numerator = 116*

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

in unequipped existing and/or new sites:	*unequipped sites (providing immunization services or not, including existing sites without active devices) and new service sites being equipped with Platform eligible equipment.*	*Inventory Report*		*Denominator=116* *Percentage=0%*	*Denominator=116* *Percentage=26%*	*Denominator=116* *Percentage=60%*	*Denominator=116* *Percentage=100%*
4. ***CCE maintenance***	*Percentage of functionality of cold chain equipment*	*Cold chain inventory update.*	*Annually*	*N.A* *Numerator and denominator not available now.*	*80%*	*80%*	*90%*
. ***Freeze-free to non-freeze-free carrier ratio***	*Ratio of freeze-free cold boxes/carriers to non-freeze-free cold boxes/carriers in-country*			*N. A*			

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*** *indicators 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)2017*	***Target Year 1*** *(Provide numerator and denominator for calculating percentage) 2018*	***Target Year 2*** *(Provide numerator and denominator for calculating percentage) 2019*	***Target Year 3 (If applicable)*** *(Provide numerator and denominator for calculating percentage) 2020*
1	*Percent of fridges with alarms*	*Cold chain inventory update.*	*Annually*	*NA*	*10%*	*10%*	*5%*
2.							
3.							
Add more indicators HERE if needed.							