



Cold Chain Optimisation Platform Application for September 2016 (only)


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

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


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

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

Country	Uzbekistan	
Date	09 September 2016	
Contact name	Dilorom Tursunova	
Email address	dilorom.tursunova@minzdrav.uz	
Phone number	+998712441603	
Total funding requested from CCE optimisation platform (US \$)	This should correspond exactly to the budget requested in the embedded template. USD 4,989,190	
Does your country have an approved Gavi HSS support on-going?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
	Indicate the anticipated final year of the HSS: 2021	
Proposed CCE optimisation platform support start date:	Indicate the month and year of the planned start date of the support, based on the strategic deployment plan: January 2017	
Proposed CCE optimisation platform support end date:	Indicate the month and year of the planned end date of the support, based on the strategic deployment plan: December 2021	
Signatures Include signed (and official) CCE optimisation platform application endorsement by: a) Minister of Health and Minister of Finance <u>(or delegated authorities)</u> b) Members of the HSCC/ICC or equivalent committee and signed minutes of meetings where the application was endorsed In case of HSS and CCE optimisation platform requests, minutes must reflect that both were discussed and endorsed.	We the undersigned, affirm the objectives and activities of the Gavi CCE optimisation platform proposal are fully aligned with the national health strategic plan (or equivalent) and that the funds for implementing all activities, including domestic funds and any needed joint investment, will be included in the annual budget of the Ministry of Health:	
	Minister of Health (or delegated authority) Name: Signature: Date:	Minister of Finance (or delegated authority) Name: Signature: Date:

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

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

No	Strategy / Plan / Document <i>*All documents are mandatory. Only complete applications will be assessed.</i>	Attached Yes/No	Final version (dated)	Duration	<u>Comments</u>
1	Signature sheet for the Minister of Health and Minister of Finance, or their delegates				
2	Signature sheet for HSCC/ICC or equivalent committee endorsement and minutes of meetings				
3	National Health Sector Development Plan	No			
4	cMYP	Yes			
5	EVM Assessment	Yes			
6	EVM Improvement Plan	Yes			
7	EVM Annual Workplan AND Progress Report on EVM Improvement Plan¹	Yes			
8	CCE Inventory Report² AND Facilities Segmentation Plan	Yes			
9	Cold Chain Rehabilitation and Expansion Plan, AND Equipment Selection and Strategic Deployment Plan	Yes			
10	Maintenance Plan with financing	Yes			
11	Proof of status for CCE tariff exemptions waiver	Yes			
12	OTHER RELEVANT DOCUMENTS	Yes			

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

Provide approximately 1 page

National Health Sector Development Plan

Since its independence, Uzbekistan has initiated several major health reforms, with the aim of improving health care provision, governance and financing. Primary care has been changed from a multi-tiered to a two-tiered system, the training of GPs has been initiated and the financing of primary care is increasingly based on capitation. There are also efforts to introduce new approaches to maternal and child health, public health, noncommunicable disease prevention and control, and monitoring and evaluation. Primary care reforms focusing on health care infrastructure at the district level, supported by international funding, started in the late 1990s and continue to this day. In 2012, the government of Uzbekistan and the World Bank group signed two loan agreements that aim to further develop the reform. The Project Health III (2012–2018) has four components that focus on: 1. health service delivery at the levels of district/city hospitals and primary care facilities; 2. health financing and management; 3. noncommunicable disease prevention and control; 4. project management and evaluation.

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

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

It is planned that improvements of health service delivery will be carried out by equipping district- and city-level hospitals with a selected list of medical equipment, medical furniture and waste management equipment.

CCEOP support will allow addressing weaknesses of cold chain infrastructure in primary health care, will contribute to improving geographical access to MCH services, and will facilitate development of knowledge and skills among health workers to improve quality of immunization services.

GAVI HSS proposal

The Uzbekistan Health System Strengthening (HSS) proposal for GAVI support has been approved in 2014 for a period of 5 years. HSS proposal identified a number of health system bottlenecks, affecting the immunization outcomes in long run, such as: Obsolete and insufficient infrastructure; Weaknesses in procurement and distribution of supplies and institutionalization of supportive supervision; Insufficient skills (due to high turnover rate) among vaccinators/nurses health care professionals to manage vaccines and deliver immunization services; Weak management of PHC care facilities as autonomous entities; Lack of modern information management practices.

The HSS Objective #1: "Increase performance and sustainability of immunization services" covers two groups of activities: activities to address obsolete or insufficient infrastructure of the State Sanitary Epidemiologic Service (stores, cold chain equipment, transportation) and activities to improve vaccination practices via training of healthcare personnel (general practitioners, pediatricians and 10,000 thousand vaccinators/nurses) and supportive supervision. In addition, The HSS Objective #2 focuses on improving management skills of PHC services and Objective 4 addresses data management, including vaccine (and other supply) stock management.

CCEOP proposal is fully aligned with HSS Objective 1 by supporting cold chain infrastructure expansion, upgrade and management as well as by facilitating development of knowledge and skills among health workers. The same time HSS activities, in particular under the objectives # 2 and #4 will provide support to strengthening other supply chain fundamentals, including supply chain management and data for evidence based decision making.

Considering the 5 year period of HSS and since HSS funds have not become yet operational as of 2016, it is expected that the time-frame of the project will be expanded to 2021. The timing of CCEOP proposal has been defined accordingly as 2017-2021.

cMYP

The Government of Uzbekistan recognizes NIP as one of the priority national public health programs. Immunization is provided to all citizens free of charge. New Law on Sanitary Epidemiological Welfare of Population was recently adopted with a separate immunization related chapter and takes steps towards clarifying organizational structure for vaccine management with defined roles and responsibilities. MOH, MOF, and Cabinet of Ministers become responsible for reporting to the parliament for planning and execution of immunization budget. The five-year cMYP (2016-2020) aims introducing new vaccines and reaching the "un-reached" population through Reaching Every District (RED) strategy. Since the work on finalizing the cMYP has concluded before findings of the last EVM assessment and cold chain inventory (2016) have been published, the cMYP would require further updating in order to integrate their findings as well as the proposed actions, including those which are part of the CCEOP application. That will contribute to strengthening quality of vaccines and immunization services and reaching vaccination coverage goals and disease control targets.

EVM Assessment

The EVM assessment conducted late 2015 shows that, in general, vaccines and diluents are stored at the correct temperatures, important vaccine management policies are adopted and vaccine arrival procedures have improved. However, considering the very large and expanding birth cohort in Uzbekistan, as well as dynamic implementation of new vaccines, vaccine storage capacity at the central level as well as in many stores at sub-national and district levels is not sufficient to cope with increasing vaccine volumes. In addition, dry stores requires improvement to accommodate in a safe manner all syringes and safety boxes.

The following key recommendations aim to further improve performance of the immunisation supply chain in order to meet EVM standards and will be supported by CCEOP:

E2. Strengthen temperature monitoring: provide 30-day electronic temperature loggers and re-designed temperature recoding tools for all vaccine refrigerators starting at district level stores and expanding to health facilities.

E3. Plan for significant expansion of cold chain storage capacity at the national vaccine store and sub-national and district stores by purchasing and installing new equipment and power back-up solutions;

E5. Establish an effective preventive maintenance programme for buildings, cold chain equipment and vehicles.

E6. The stock management documents shall be reviewed and updated in order to ensure vaccine lot traceability; Introduce an appropriate stock management computer application at central and provincial levels; Adopt buffer stock policy and set minimum, maximum stock and reorder stock level for each facility; monitor stock levels and maintain them within Min/Max levels

E7. Use freeze-indicators during transportation of freeze sensitive vaccines and register their status in the vouchers.

E9. Develop SOP in line with nine EVM criteria's for each level in the immunisation supply chain and setup a quality management system.

In addition, the HSS funds released by CCEOP contribution will be used to strengthen cold chain at national and sub-national level, where significant investment is required.

GAVI joint appraisal, 2015

GAVI joint appraisal identified a number of issues which are in line with the EVM2015 assessment findings. The cold chain system has not received investment by the government or donors for very long time. As country did not apply for cash funding from Gavi in the past (no ISS or HSS), there has been no substantial investment to the system. EVM report 2012 indicated that central store was in need upgrades and that the system cannot take on new vaccines. Therefore a substantial portion of HSS funds are to be invested in cold chain upgrades and renovation.

Currently, the cold chain storage capacity is not sufficient due to sharp increase of required storage volume following implementation of new routine vaccines (PCV and IPV in pipeline) as well as non-EPI vaccines and other biologicals kept in the vaccine cold chain; as a consequence, the national vaccine store acts as a transit point rather than the main vaccine storage. As HSS funding is yet to be disbursed to the country, the country requested to further postpone HPV introduction as it would be not possible to manage the storage of the vaccine.

In addition, the following needs were identified during the JA mission for the cold chain system improvements:

- Service agreements with private pharmaceutical companies to address cold chain capacity shortages at the national level;
- Address the lack of national cold chain regulations, applicable beyond EPI vaccines (including customs storage, distributors of pharmaceuticals, private vaccine supply chain);
- Vaccine transport facing the same challenge of handling dramatically increased vaccine volumes;
- Continuous temperature monitoring using electronic and computerized systems is not implemented;
- Stock management needs improvement: due to limited cold chain capacity at national and regional levels vaccines are pushed down to be stored at the district level where conditions are less secure;
- A formal cold chain maintenance programme has not been established reducing the effectiveness of the investment in cold chain;
- Update requirements in the HSS proposal basing on of cold chain inventory needs assessment and the forthcoming EVM assessment (November) focusing to address the needs at the central, regional and district level;
- In cooperation with NRA, develop integrated national cold chain regulations, applicable to all pharmaceuticals requiring cold chain, including vaccines and to all actors involved in vaccine transport and distribution;
- Establish a functional structure or mechanism for cold chain maintenance and repair

CCE Inventory Report, 2016

Cold chain inventory covered about 95 percent of facilities providing immunization services. According to it, access to immunization services in Uzbekistan may be limited by weaknesses in the supply chain. These weaknesses prevent vaccines and immunization supplies from being available at health centers on a regular basis:

about 29 percent of facilities reported access to power supply less than 16 hours a day and 9 percent did report that electricity supply was available for less than 8 hours;

a total of 272 (7.2%) immunization delivery sites did not have any active refrigeration equipment;

out of total number of refrigerators and freezers 1,819 (42%) were older than 10 years, including 483 (67%) PQS ILRs, 137 (72%) PQS Freezers and 1,189 (35%) domestic refrigerators);

most of the PQS cold chain equipment at sub-national and district stores is outdated, about 92 percent of ILRs are older than 10 years and most existing cold rooms are old and are not safe for storing vaccines;

at service provision level domestic refrigerators are used to store vaccines – only about 5% of the birth cohort is served by functioning PQS-approved CCE;

maintenance of cold chain equipment by a qualified technician is available only in about one in five facilities providing immunization services and district stores. No stock of spare parts is available to address the maintenance and repair needs of PQS equipment;

lack of continuous temperature monitoring;

no reserve stock policy exists, which results in numerous short-term stock-outs.

All of these deficiencies of the vaccine supply chain will be directly addressed by the CCEOP support.

Coverage surveys

The last household coverage survey was conducted in Uzbekistan with UNICEF support in 2006. There are no available recent survey data to assess vaccination coverage by various background characteristics.

3. APPLICATION DETAILS



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

3.1 Application requirements overview

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

- **Countries must make a single application to the CCE optimisation platform, requesting support for both the ‘initial’ and ‘scale-up’ phases.**
- Sufficient, well-functioning cold chain equipment is one “fundamental” prerequisite for an effective immunisation supply chain, complementing the other “fundamentals” comprised of: supply chain managers; data for management; optimised & efficient design of the distribution system; and a continuous improvement process over time. **Support from the CCE optimisation platform should be demonstrated to complement investments from other sources in these fundamentals**
- **Countries should also demonstrate, in their application, how the Platform support will contribute to sustainable improvements in immunisation coverage and equity, consistent with country targets.**

4. APPLICATION REQUEST

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

4.1. Situation analysis and requested support

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

Section	Required information
Situation analysis of country’s supply chain and CCE (number, distribution, functionalities etc.) <u>Provide 3 pages</u>	<p>1. <i>How is the country’s immunisation supply chain administered?</i></p> <p>The NIP supply chain is organised into four levels: (i) The central level; (ii) The subnational (oblast) consist of 15 subnational vaccine stores (including 12 oblasts, one autonomous republic (the Republic of Karakalpakstan), one municipality (city of Tashkent) and Navoi Mining Company); (iii) District level, consisting 199 district vaccine stores and (iv) Immunization service provider level consisting of 3,988 health facilities (maternity hospitals, mother and child health care centers urban and rayon level polyclinics and rural medical offices.</p> <p>The Ministry of Health is the key body to plan, manage and regulate health services. The national immunization program is managed by State Surveillance Department of the Ministry of Health and the NIP Manager is a Lead Specialist of the Department. Planning, procurements and distribution of immunization supplies, including vaccines, is managed</p>

by the Republican centre for State Sanitary and Epidemiological Surveillance (RCSSES), which has a network in all province and district centres. The epidemiologists employed at the branches of RCSSES are acting as province and district EPI managers, respectively. Routine immunization delivery in Uzbekistan is based on fixed immunization point strategies – vaccines are administered through the network of about 3,988 facilities, including 279 maternities, 529 polyclinics and 3180 rural medical offices. BCG1 and hepatitis B vaccine are administered in maternity hospitals. In health facilities (urban and rural), vaccination is carried out on specific days in order to decrease vaccine wastage when using multi-dose vials.

According to cold chain inventory report, there is a large variation of the target population size both and within each type of facility. The number of facilities providing immunization services to less than 76 new-borns per year accounts for less than 25 percent of rural medical offices. Having a widespread network of facilities represents an important asset to reach remote locations with routine services and reduce immunization inequities. This is particular important in a large country with difficult to access areas as Uzbekistan. Introduction of new vaccines (rotavirus vaccine -in 2014, pneumococcal vaccine – in 2015, IPV - 2017 and country has been approved for GAVI support for HPV introduction) brings new challenges to the immunization supply chain. In addition, switching to lower dose presentation and expanding the use of non-routine vaccines (i.e. influenza vaccine, hepatitis A, rabies vaccine) will double the vaccine volume in the next five to ten years – up to 464.3cm³/FIC per fully immunized child.

Growing population puts an additional pressure on cold storage capacities. Since the 1970s, Uzbekistan's population has more than doubled. Its birth cohort, one of the largest in the region, is estimated to reach 700.000 by year 2020.

Vaccine forecasting is under the responsibility of the Republican CSSES, following a bottom-up demographic and vaccine stock data collection approach.

Vaccine procurement: Routine vaccines are procured by Republican CSSES via UNICEF SD. In case of non-routine vaccines local procurement is organized both by the Republican CSSES (national procurement) and by the Regional CSSES (local procurement). There is a dedicated budget for vaccine procurement. Financing of routine vaccines is performed centrally by the Ministry of Health, which allocates the dedicated budget for vaccine procurement to the Republican CSSES. In case of non-routine vaccines – both national and regional budgets are engaged to procure vaccines.

Supply chain financing: There are no dedicated budget lines for supply chain. Supply chain operation is financed through the general budgets allocated to public health facilities and health care providers. Budgets for public health structures at national, regional and district levels are allocated centrally by the Ministry of Health. On the opposite side, allocation of the budgets for immunization service providers is decentralized and lies with the responsibility of local authorities at regional and district level. This has important implications on division of responsibilities among various health structures and design of the immunization supply chain.

Vaccine receipt & storage: There is no local vaccine production in Uzbekistan. All Routine vaccines are received at the national vaccine store and stored there until further distribution. In case of non-routine vaccines - some of them are received by the national vaccine store, the others – are received and stored by the regional vaccine stores. As a matter of principle each store is responsible to collect their vaccines from higher levels: National vaccine store – collects vaccines from the airport or local wholesalers using two refrigerated trucks, as soon as each shipment arrives; Regional SES / stores collect vaccines from the national vaccine store (or from local airports) as soon as they are made available. Cold boxes or vaccine manufacturer transportation containers are loaded into general purpose vehicles. Vaccines are stored in ILRs and in some cases – in WICRs; District SES/stores are expected to collect monthly vaccines from Regional vaccine stores, using cold boxes and general purpose vehicles They store vaccines in ILRs); Immunization service providers collect vaccines once a month from district vaccine stores using vaccine carriers. Vaccines are stored with immunization providers maximum

for one month – in most cases in domestic refrigerators, not prequalified for vaccine storage. Due to frequent power supply breaks immunization service providers often may receive vaccine for one immunization session only.

Vaccine distribution programme:

Due to lack of storage capacity, the national store distributes each shipment as received (rather than distributing all required vaccines per a supply period). In some cases it sends vaccines to remote regions using local airline cargo services. In such cases vaccines are packed in manufacturer transport boxes and delivered to the airport cargo terminal. There is no currently a formal safety stock policy in place and, furthermore, the very limited existing capacity of the national vaccine store does not allow maintaining a safety vaccine stock. Therefore, after distributing the received shipments the store often has zero vaccines in stock. Regional vaccine stores are supposed to receive and store a quarterly vaccine supply and to distribute vaccines monthly to district stores. Because of the limitations faced by the national vaccine store and lack of a set distribution programme, regional vaccine stores are often in the situation to receive volumes of vaccines exceeding quarterly supply. District stores issue vaccines monthly to immunization service providers. The immunization supply chain design and operation in Uzbekistan faces important challenges in accomplishing its essential functions – ensuring continuous access to assured quality vaccines. It's not effective – because its storage and transport capacity does not accommodate the required vaccine amounts and furthermore, its operation is neither efficient – because of excessive efforts and resources required to handle individual shipments, rather than having in place distribution programmes for all needed vaccines.

Cold chain equipment:

The physical inventory of cold chain equipment, updated in February 2016 gives an overall picture of the situation (number of equipment, location, operating condition, etc.).

The cold chain is organised in four levels in Uzbekistan:

Central level: Vaccines are kept in three walk-in cold rooms and one freezer room. The net capacity at +2 to +8 degrees is 30,5 cube meters of storage volume.

The existing cold storage capacity is not sufficient for storing even the routine vaccines (without influenza, hepatitis A, rabies etc.) at the current immunization schedule, under the assumption of the annual needs being delivered in four instalments (every three months) and maintaining a recommended three month reserve stock.

As a minimum, for storing routine and non-routine vaccines (including influenza vaccine in 1 dose vials), 4 additional cold rooms 30 m³ gross capacity each are required to meet the current needs and 7 additional cold rooms would be required to meet the needs of the new schedule. These problems will be addressed through HSS

Subnational (oblast/region) level: ILRS (most of them Vestfrost MK 304) in large numbers and freezers are used currently in most facilities at this level and important storage capacity gaps do exist for the current immunisation schedule. Expanding further the storage capacity using ice-lined refrigerators is not feasible due to large target population and high number of units required. Providing sub-national vaccine stores with walk-in cold rooms to manage the existing and increasing demand is planned through HSS support.

Lowest-delivery (district) level: According to cold chain inventory data, ILRs are widely used at district level – 329 ILRs (most of them Vestfrost MK 304) were reported. About 92 percent of cold chain equipment is older than 10 years at this level and according to global vaccine management policies requires replacement. These problems will be addressed through HSS.

Service provider level: It is common to use domestic refrigerators including small bar/dormitory type coolers at this level. All facilities have vaccine carriers. The main issue is that ILRs do represent only about 5 percent of total number of refrigerators at this level and the electrical supply is not adequate for refrigerators with short holdover time. About 12% of rural health facilities have less than eight hours of electrical power supply per day and another 20 percent of facilities reported power supply 8-16 hours a day, making domestic refrigerators useless for vaccine storage. About 7 percent facilities do not have

any active refrigeration equipment.

2. *What weaknesses have been identified in the country's supply chain?*

Access to immunization services in Uzbekistan may be limited by weaknesses in the supply chain. These weaknesses prevent vaccines and immunization supplies from being available at health centers on a regular basis. About 25 percent of rural medical offices conduct immunization sessions only once per month and the other 50 percent of facilities - twice per month.

The existing cold storage and transport capacity of the national, sub-national and district stores is not sufficient to accommodate neither the present routine vaccine volumes nor future requirements. The lack of storage capacity prevents the country to implement a proper vaccine distribution and stock management system, which would ensure timely distribution of needed vaccines through the supply chain and reserve stock of necessary vaccines;

Access to reliable power supply is a problem in Uzbekistan, in particular affecting rural and remote facilities providing immunization services. About 29 percent of facilities reported access to power supply less than 16 hours a day. A total of 366 facilities (9 percent) did report that electricity supply was available for less than 8 hours.

Outdated cold chain equipment at sub-national and district stores: according to cold chain inventory, about 92 percent of ILRs are older than 10 years and most existing cold rooms old and are not safe for storing vaccines.

Domestic refrigerators are used by the majority of facilities providing immunization services (ILRs do represent only about 17 percent of total number of used refrigerators) that would expose vaccine to unsafe temperature ranges, in particular in the absence of continuous power supply.

Maintenance of cold chain equipment by a qualified technician is available only in about one in five facilities providing immunization services and district stores. No stock of spare parts is available to address the maintenance and repair needs of PQS equipment.

No continuous temperature monitoring during vaccine storage and lack of freeze exposure monitoring during vaccine transportation.

No reserve stock policy exists, which results in numerous short-term stock-outs of vaccines and a large number of vaccine shipments (e.g. weekly instead of monthly at the district level).

No central distribution system is available for immunization service providers– in order to collect vaccines, they have to travel using private or public transportation means and bring their vaccines in vaccine carriers.

Geographical access challenges: health workers from remote districts and health facilities must travel long distances to collect the vaccine from their district store. About 8 percent of facility workers in Uzbekistan have to travel more than 50km to reach the district vaccine store.

Reducing the fiscal space to accommodate the increasing needs for infrastructure and equipment investments: country is expected to increase its allocation for vaccine procurement in the coming years (from 0,2% to 0,9% out of public spending on health) due to graduation from GAVI support.

Coverage inequities: although vaccination coverage is high at national level, there are some districts in hard-to-reach and remote areas (e.g. Boysun, Uzun, Sariosiyo, Urgut, Dehkanabod, Sughd, Muinak) which do not reach 90% coverage due to difficult access caused either by geographical or administrative reasons.

The above mentioned challenges threaten performance of the immunization system in long run and sustain an environment raising concerns, discouraging demand for immunization services and decreasing immunization coverage. The discrepancy between immunization supply chain requirements and existing capacity is expected to grow in the coming years and allow for greater inequity if no action is taken. Furthermore, lack of action will prevent the country from introducing and providing universal access to new vaccines (i.e HPV).

3. *Through what interventions are these weaknesses currently being addressed?*

Vaccine storage and transport capacity shortages are addressed through increased number of shipments (which raise efficiency issues) and moving vaccine stocks to lower levels of the system (exposing vaccines to high/low temperature risks, considering power cuts and high proportion of obsolete and non-adequate equipment).

Lack of a formal safety stock policy is not addressed currently, resulting in frequent stock outs, in particular at higher levels (district, regional) in the supply chain.

Access to reliable power supply is addressed by reducing frequency of immunization sessions, linking them to the day of receipt of vaccines.

To improve holdover time of domestic refrigerators the national policy recommends keeping inside bottles with water and frozen ice packs in the freezing compartments; Lack of funding to strengthen the immunization supply chain is not currently addressed in a centralized manner. Rather than, each facility copes with its own problems, being responsible to allocate from scarce budgets funds for the immunization supply chain; Geographical access is addressed through organizing outreach sessions, and linking immunization sessions to vaccine delivery visits;

4. *Describe challenges that are hindering the implementation of these interventions.*

The immunization supply chain design and operation in Uzbekistan faces important challenges in accomplishing its essential functions – ensuring continuous access to assured quality vaccines. It's not effective – because its storage and transport capacity does not accommodate the required vaccine amounts and furthermore, its operation is neither efficient – because of excessive efforts and resources required to handle individual shipments, rather than having in place distribution programmes for all needed vaccines. The remote and hard-to reach areas are mostly affected with inadequate power supply, so the lack of adequate refrigeration equipment cannot be compensated by increasing the frequency of vaccine deliveries to the facility.

Lack of adequate cold chain technology to cope power supply cuts, in particular in remote areas, has a direct impact on reducing timely access to vaccines.

Important investment in cold chain infrastructure is jeopardized by increasing share of vaccine cost and limited fiscal space.

5. *Describe lessons learnt from recent supply chain related support that inform the current request for CCE optimisation platform support.*

The last centralized supply of CCE in the country was in 2012, when 28 Vestfrost MK 304 refrigerators and 28 Haier HBD-286 Freezers have been supplied through UNICEF SD.

One of the important observations is the limited local infrastructure capacity to accommodate newly supplied equipment, in particular at regional and district stores. Due to large target groups and gradual increase of the number of ILRs along with new vaccine introduction, the regional stores reached a high number of running ILRs – up to 17 MK304 refrigerators per store. That requires large building space, consumes energy and makes difficult stock management and temperature monitoring. Considering the future needs of doubling the storage capacity a change in the vaccine storage model is required at regional vaccine stores.

Uzbekistan has an extreme continental climate. It is generally warmest in the south and coldest in the north. Temperatures in January average -9°C in the north and -1°C in the south. However, extreme fluctuations can take temperatures as low as -35°C. The average maximum summer temperatures is 40°C in the South and 36°C in the central part and in the north. Before supplying the new equipment it would be important that appropriate refurbishment/expansion of infrastructure is performed to allow proper functioning conditions for the equipment. It would be important to harmonize allocation of HSS funds for that purpose.

The Government of Uzbekistan expressed its commitment to advance solar energy by establishing in 2012 a Solar Energy Institute (SEI) to promote, develop and transfer modern solar technology. In addition, it has initiated working on large-scale solar power

projects. That should facilitate identifying local expertise that could be engaged in supporting installation of solar direct drive (SDD) refrigeration systems.

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

Based on the cold chain inventory, 91% of health facilities have access to grid electricity for more than 8 hours per day. Access to power supply less than 8 hours a day was reported by 366 facilities, 98 percent of them are rural medical offices. Seventy one percent of facilities with power supply less than 8 hours a day are from Kashkadarya (161 facilities) and Surhandaria (98 facilities) regions. They are followed by Karakalpakstan (37 facilities), Samarkand (33 facilities) and Andijan (15 facilities). Two to ten facilities were reported also by Djizak, Syrdarya, Namangan, Tashkent regions.

It is important to mention that 785 (20 percent) of facilities reported power supply 8-16 hours a day. Since immunization service providers use mainly domestic refrigerators for vaccine storage, and considering their very short holdover time, vaccine potency in such facilities will be at risk.

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

Cold chain inventory covered 95 percent of facilities providing immunization services, out of them 272 (7.2%) facilities did not have any refrigeration equipment.

The inventory recorded 11 cold rooms and 4,353 refrigerators and freezers (including 721 (16.6%) PQS/PIS ILRs, 189 (4.3%) PQS/PIS Freezers and 3,450 (79.2%) domestic refrigerators in use in the immunization supply chain. Overall more than 200 models of refrigerators and freezers have been identified.

Six outdated cold rooms at subnational vaccine stores were found to have one running cooling unit only.

In working condition were found 4271 (98%) refrigerators and freezers, including 690 (96%) PQS/PIS ILRs, 177 (94%) PQS/PIS freezers and 3,395 (99%) domestic refrigerators).

Requiring urgent maintenance were found 46 (2%) refrigerators and freezers, including 20 (3%) PQS ILRs, 6 (3%) PQS Freezers and 20 (0.6%) domestic refrigerators).

The 13 equipment units reported as not-working included 11 (1.5%) PQS ILRs – most of them older than 15 years and 2 (1%) PQS Freezers.

Out of total number of refrigerators and freezers 1,819 (42%) were older than 10 years, including 483 (67%) PQS ILRs, 137 (72%) PQS Freezers and 1,189 (35%) domestic refrigerators). Most of the ILRs and freezers at rayon and region store level are older than 10 years and require replacement.

8. *What percent of the birth cohort is served by effectively functioning, PQS-approved CCE currently?*

Based on the cold chain inventory, at the service provision level about 7% of the birth cohort is served by functioning PQS-approved CCE. As mentioned above, ILRs are preponderantly available at district and regional stores, while domestic refrigerators are used by the most immunization service providers.

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

This project will allow to strengthen the immunization supply chain in Uzbekistan and solve

numerous problems, such as:

- **Timely availability of vaccines at all levels:** this application will allow the country to equip all health facilities that do not have refrigeration equipment, to replace aging and inadequate refrigerators, to increase storage capacity, to implement a proper stock management system and monitor temperature throughout the cold chain. This will improve access to quality assured vaccines at all levels
- **Vaccination access for the country's entire population:** High-quality vaccines will be available for the entire population no matter of access to power supply, distances or restricted access. This project will allow health facilities to increase frequency of immunization sessions to reduce missed opportunities and to provide new vaccination opportunities to populations residing in hard-to-access areas in order to reach the respective population in a timely manner.
- **Introduction of new vaccines:** Increased cold storage capacity will allow introduction of new and underused vaccines into the routine immunization programme in a safe manner.
- **Sustained and harmonized vaccination coverage:** This project will, support establishing more accessible immunization services in hard-to-reach areas and will increase the number of immunization opportunities in other areas. It will support overall improvement in the quality of immunization services, sustain public confidence and demand for vaccines, which are essential in reaching and maintaining high vaccination coverage.
- **Strengthening the supply chain:** This project represent a long term investment that will strengthen the supply chain by reducing the burden of the required upfront investment, supporting implementation of energy saving technologies, freeing human resources and money from burdensome transportation requirements to remote areas and extending the equipment life with effective installation and maintenance programmes. It will allow better forecasting, distribution and stock management.
- **Equity between all regions, districts and health facilities:** The project will expand access to safe vaccine storage equipment and technology across the country. Disparities between health facilities and districts will be significantly reduced. Vaccination activities will be equitably organised at all levels with an adequate level of cold chain quality.
- **Security and quality of vaccines and wastage reduction:** The use of solar refrigerators and ILRs will allow establishing safe vaccine storage capacity in hard to reach areas and facilities with unreliable power supply. This will secure uninterrupted supply availability, reduce stock-outs and minimize vaccine wastage due to exposure to high temperature or accidental freezing risks.
- **Strengthening cold chain maintenance:** This application will support the country to implement an effective cold chain maintenance programme as an important vaccine quality assurance component. The developed maintenance plan will allow the country to establish qualified maintenance capacity and services and institute a routine programme for qualified preventive and corrective maintenance.

10. Describe any other supply chain challenges that CCE optimisation platform support will assist in mitigating?

This application will support the country in improving management of cold chain based on evidence through regular updates of the inventory, systematic collection and analysis of cold chain functioning data, and taking timely corrective action

Maintenance training of staff will extend the equipment life, making cold chain more reliable and sustainable;

Skills and knowledge of health care professionals will be improved through training on the use of new equipment.

CCEOP investment will allow addressing limited fiscal space by releasing funds from

other sources (including HSS) to strengthen cold chain at higher level, including refurbishment of the national and sub-national stores, procurement of cold rooms and refrigerated vehicles that would improve vaccine distribution down to the district level.

11. What are the overall CCE needs?

This project represents an important component of a broader cold-chain rehabilitation plan in Uzbekistan. While CCEOP aims to address cold-chain needs at the district and immunization service provision level, another component/HSS funding will be focusing on strengthening vaccine storage and transportation systems at national, and subnational/oblast and district level.

This project will provide the vaccine supply chain with prequalified, high quality refrigerators, voltage stabilizers, continuous temperature monitoring devices, replace refrigerators that do not meet PQS standards in all district stores and critical health facilities, allow proper stock management, establish sustainable equipment maintenance services, reduce the risk of stock-outs by allowing reserve stock policy to be introduced and finally, allow introduction of new vaccines

Service providers will be supplied with adequate prequalified refrigeration and temperature monitoring devices. For remote rural areas with inadequate electrical power supply (i.e. less than 8 hours a day) SDD refrigerators will be purchased.

The CCE needs are estimated as follows:

Equipment to be covered by CCEOP with HSS contribution:

- 200 SDD refrigerators up to 60Lt (VLS054 Green line) to equip facilities with power supply less than 8 hours a day (of them 37 newly equipped and 163 replacing obsolete and inadequate equipment). Note: The power supply is expected to improve in another 166 facilities documented during the assessment with power supply less than 8 hours a day – they are planned for on-grid ILRs supply. The power supply status will be updated annually and the final decision on allocated equipment will be made depending the status updated.;
- 2,215 on-grid ILRs up to 60Lt (VLS200A) to equip PHC facilities providing immunization services. Of them 166 units to equip PHC facilities which are expected to improve the grid power supply to at least 8 hours a day, and 785 units to equip PHC facilities with power supply 8-16 hours a day (of them 71 newly equipped and 880 replacing obsolete and inadequate equipment) . The remaining 1264 ILRs will be used to equip facilities with power supply >16 hours a day having > 15 children under one (of them 164 newly equipped and 1,100 replacing obsolete ILRs and domestic refrigerators);
- 34 on-grid ILRs up to 100Lt (VLS300A) to equip district vaccine stores – all have power supply >8 hours (to expand storage capacity and replace obsolete and inadequate equipment)
- 494 on-grid ILRs up to 130Lt (VLS350A) to equip District vaccine stores – all have power supply >8 hours (to expand storage capacity and replace obsolete and inadequate equipment)
- 200 on-grid freezers up to 300Lt (MF314) to equip District vaccine stores – to replace obsolete equipment;
- 2,943 voltage regulators to be provided bundled with new equipment;
- 6,800 units of 30-day continuous temperature monitoring devices (in addition to devices bundled with new equipment) to re-establish continuous temperature monitoring and replenish the device stock every 3 years;
- 225 sets of spare parts for CCEOP equipment to establish a stock of spare parts for all types of the supplied CCEOP equipment.

CCE needs that will be covered additionally by HSS funds:

- 10 cold rooms – 10 m³; 18 cold rooms – 30 m³ and 7 cold rooms – 40 m³ to expand storage capacity of regional vaccine stores (will be covered through HSS);

- 1 Power generator 250VA for the newly built national vaccine store;
- 18 Power generators 15kW to equip sub-national and district vaccine stores
- 35 voltage regulators 20 KVA 3-phase, to equip cold rooms;
- 31 sets of central temperature monitoring systems to equip cold stores at national and sub-national level;
- 858 cold boxes, 20 LT to establish surge capacity at district stores and meet the needs of large facilities providing immunization services;
- 886 vaccine carriers, 7Lt to meet the needs of large and medium size facilities providing immunization services;
- 4,200 vaccine carriers, 2.6Lt to meet the needs of medium and small size facilities providing immunization services;
- 17 refrigerated trucks (5 refrigerated truck 11m³; 4 refrigerated truck 15m³; 8 refrigerated truck 20m³) the develop a new vaccine transport system from the national to the district level;
- 204 pickup vehicles to equip district stores to provide vaccine distribution to immunization delivery sites.
- Building and equipping a new national vaccine store;
- Refurbishing cold and dry vaccine stores at regional and district level.

12. Which of the CCE needs identified in the situation analysis are urgent, and why, and therefore should be addressed in the urgent scale-up phase? (E.g. type of equipment, model, capacity, number etc.)?

The CCEOP project will cover the ILRs, SDD refrigerators and spare parts, voltage regulators and temperature monitoring devices for district and service provider level in order to ensure appropriate vaccine storage capacity is built and adequate technology and equipment is chosen to address power supply challenges.

The Prioritised URGENT CCE needs aim to address emergent risks to vaccines:

First priority is to establish safe storage capacity at district stores. Not addressing bottlenecks at this level would have a severe impact on vaccine availability and potency service delivery sites.

The second priority is supplying ILRs to facilities with power supply 8-16 hours a day – newly supplying or replacing domestic refrigerators. The number of these facilities is large (770 facilities) and cost effective solutions are available (ILRs). This will allow improving dramatically the quality, safety of vaccines and timeliness of immunization in a large proportion of the birth cohort.

The third priority is supplying solar direct drive refrigerators to priority facilities (at list 25 percent of those in need) with no access to reliable grid power supply (less than 8 hours a day). Experience on installing and using this new technology will be accumulated to inform decision making on its effectiveness and potential for its further expansion.

The fourth priority is establishing continuous temperature monitoring by implementing 30-day continuous temperature monitoring devices (in addition to devices bundled with new equipment)

The Scale-up support phase aims to expand new technology and PQS CCE:

Expanding the use of new SDD technology to address inequities and meeting the needs of areas suffering from severe grid power shortages – less than 8 hours a day (subject to re-assessment of needs, considering the ongoing Government efforts to improve power supply in the country);

Continuing replacement of domestic refrigerators with PQS equipment at service delivery level, in priority areas – those at risk of power cuts, as well as the facilities serving the largest cohorts;

Replace obsolete PQS equipment, including ILRs older than 15 years at district stores and in facilities at service provision level,

Providing spare parts and repairing PQS equipment, which is less than 10-years old; older

Country's urgent and scale-up CCE needs

(number, distribution, functionalities etc.)

Provide 1 page

non-functional equipment will be replaced with new equipment).
The last priority is replacement freezers older than 15 years, which will be used primarily for preparing ice-packs at district vaccine stores (to pack vaccines delivered to service delivery level).

13. What percent of the birth cohort will be served by effectively functioning CCE when the Platform equipment is deployed?

Following the cold chain inventory findings, the percent of birth cohort served currently by effectively functioning CCE (ILRS less than 15 years old) is 7 percent. It will increase to 31% in the initial stage of support and to 75% in the scale up stage.

The remaining facilities will be represented by facilities having reliable power supply and equipped with validated domestic refrigerators, as well as small facilities covered through outreach immunization services.

14. Explain how these urgent needs relate to the current bottlenecks (as outlined in the preceding section)?

Establishing safe storage capacity at district stores will ensure that all vaccines which passed through the district stores are safe and potent when delivered to lower levels and the vaccines. This will also allow implementing proper stock management and observing safety stock policy, ensuring timely and full availability;

Deploying appropriate technology to coop with grid power supply limitations will ensure access to safe and potent vaccines for the entire population no matter of access to power supply, distances or restricted access. This will allow increasing frequency of immunization sessions, reducing missed opportunities and providing new vaccination opportunities to populations residing in hard-to-access areas.

Increased cold storage capacity will allow introduction of new and underused vaccines into the routine immunization programme in a safe manner.

This project will, support establishing more accessible immunization services in hard-to-reach areas and will increase the number of immunization opportunities in other areas. It will support overall improvement in the quality of immunization services, sustain public confidence and demand for vaccines, which are essential in reaching and maintaining high vaccination coverage.

This project represent a long term investment that will strengthen the supply chain by reducing the burden of the required upfront investment, supporting implementation of energy saving technologies, freeing human resources and money from burdensome transportation requirements to remote areas and extending the equipment life with effective installation and maintenance programmes. It will allow better forecasting, distribution and stock management.

The project will expand access to safe vaccine storage equipment and technology across the country. Disparities between health facilities and districts will be significantly reduced. Vaccination activities will be equitably organised at all levels with an adequate level of cold chain quality.

The use of solar refrigerators and ILRs will allow establishing safe vaccine storage capacity in hard to reach areas and facilities with unreliable power supply. This will secure uninterrupted supply availability, reduce stock-outs and minimize vaccine wastage due to exposure to high temperature or accidental freezing risks.

The developed maintenance plan will allow the country to establish qualified maintenance capacity and services and institute a routine programme for qualified preventive and corrective maintenance.

Expected immunisation coverage, equity and sustainability results

Provide 2 pages

15. 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

Supply of cold chain equipment to facilities which were lacking it as well as supplying adequate CCE to address power supply shortages will enable continuous immunization of

children in geographically remote areas.

b. Poorer communities (e.g. in the poorest 10% of the population)

The benefits for the remote rural areas primarily correspond to the benefits for poorer communities. The last survey assessing impact of various background characteristics on vaccination coverage was MICS 2016. According to it, vaccination coverage was lower in urban areas, among children of women with higher education and those living in richer households, which may reflect more an immunization demand and acceptance issue, rather than access to services.

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)

There are no recent data analysing gender based disparities in regard to vaccination coverage. The high reported vaccination coverage figures leave little room for such disparities. According to MICS 2016, there were no disparities identified in the vaccination coverage rates among boys and girls.

16. What analyses³ have been made, or what plans are underway, to optimise the design of the supply chain distribution system⁴ in order to improve the efficiency of the supply chain and contribute to achieving coverage and equity goals?

The immunization supply chain design and operation in Uzbekistan faces important challenges in accomplishing its essential functions – ensuring continuous access to assured quality vaccines. It's not effective – because its storage and transport capacity does not accommodate the required vaccine amounts and furthermore, its operation is neither efficient – because of excessive efforts and resources required to handle individual shipments, rather than having in place distribution programmes for all needed vaccines.

The EVM 2015 and cold chain rehabilitation plan discuss into details the opens the discussion on the need to redesign both vaccine storage and transport system to align them addressing current and future needs in an effective and efficient manner.

A detailed cold chain capacity and needs assessment has been performed at national, regional and district level.

In addition the established CCEM database allows identifying facilities for priority support, since, in addition to cold chain equipment data, it includes important facility information such as the size of the target group, access to power supply, distance and time to the vaccine collection point.

A comprehensive cold chain rehabilitation plan includes building a new national vaccine store, refurbishing regional and district stores, changing the vaccine transport model (refrigerated truck owned by regions used to transport vaccines from national to the district level and districts establishing central distribution to the immunization delivery sites) and investing in personnel. CCEOP support will allow deploying adequate technology to addressing risk and limitations related to limited access to grid power supply at service delivery sites and will expand cold chain equipment to new immunization sites.

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

This project represents an important component of a broader cold-chain rehabilitation plan in Uzbekistan. While CCEOP aims to address cold-chain needs at the district and immunization service provision level level, another component/HSS funding will be focusing on strengthening vaccine storage and transportation systems at national, and subnational/oblast and district level.

This project will relieve the primary constraints, specifically: (i) functional cold chain available at all levels, (ii) expanding storage capacities, (iii) cold chain reliability, (iv) the equipment's compliance with PQS standards at all levels, (v) improved organisation of the supply chain,

³ These plans can vary from desk reviews to complex modelling of the country's supply chain system and distribution that identify ways to increase supply chain efficiencies, to deliver potent vaccines.

⁴ NOTE: Activities to optimise the design of supply chain distribution systems are NOT funded by Platform-support.

particularly stock management and the availability of logistics to distribute vaccines, (vi) strengthening the temperature monitoring and surveillance system, (vii) reduction in vaccine wastage (viii) enable adequate maintenance of cold-chain equipment, (ix) enable introduction of new vaccines.

This project will provide the vaccine supply chain with prequalified, high quality refrigerators, voltage stabilizers, continuous temperature monitoring devices, replace refrigerators that do not meet PQS standards in all district stores and critical health facilities, allow proper stock management, establish sustainable equipment maintenance services, reduce the risk of stock-outs by allowing reserve stock policy to be introduced and finally, allow introduction of new vaccines.

The choice of CCE to be supported by the Platform aimed to establish functional cold chain capacity at district stores and immunization sites, which would accommodate vaccine storage needs for the current and new vaccines, having a 10-year long perspective and would reduce financial burden to the country to invest in cold chain equipment. It complements supply chain optimization and strengthening efforts at higher levels. Technology and equipment was chosen depending on availability of grid electricity at health facilities. Holdover time was an important parameter, considering existing power cuts in the country. Energy saving parameters of equipment models were considered as well in order to reduce facility running costs for electricity. Harmonization of models, i.e. limiting the number of suppliers and the number of supplied models was equally considered to make use and maintenance easier and less costly.

Earlier, the supply chain distribution system was focused on providing generators and other alternatives for managing electrical power supply deficiencies. Such an approach required much user involvement and was burdened by lack of funds, fuel, spare parts and proper maintenance.

The new design of the system anticipates introduction of more user independent equipment. This led to choosing SDD refrigeration equipment for health facilities without electrical power and VLS series ILRs as on-greedy equipment.

18. Concretely, how will Platform support help improve the sustainability of the supply chain system?

Platform funding of the supply chain needs at lower levels of the system allows releasing important GAVI HSS funds that will be directed to re-design the immunization supply chain and improve its operation at higher levels. That allows the government focus its limited funding on system running costs, management and maintenance.

Immunization supply chain investment needs will be addressed as a minimum for the following 10 years and country will get the opportunity to spend more time and resources in improving maintenance and operation of the system.

The cold-chain rehabilitation and expansion plan will allow addressing safe storage needs of increased vaccine volumes, effective vaccine stock management and good distribution practices, which will consequently prevent vaccine stock-outs and excessive vaccine wastage and will allow increasing the frequency of immunization sessions, implementing multi-dose open vial policy, reducing missed opportunities, reducing inequities, improving quality of immunization services and sustaining high immunization coverage across the country.

Replacing ILRs at oblast stores by cold rooms through the HSS funds will increase cold storage volumes at oblast level and enable good use of the existing ILRs for increasing storage volumes at district stores.

Purchasing new ILRs to replace non WHO-prequalified refrigerators will decrease power consumption and requirements for maintenance, allowing the supply system to reach sustainability.

Procuring SDD refrigerators for remote rural areas with inadequate electrical power supply will increase the quality of the cold chain system and reduce inequities due to access to services..

Training of EPI personnel in use of procured equipment and cold-chain management will increase management skills of the workforce and increase sustainability of the cold-chain rehabilitation programme.

Reducing the number of vaccine collections will reduce operating costs of the Programme. The energy efficient equipment will additionally reduce operating costs of facilities. Voltage regulators will reduce the damage to cold chain equipment due to voltage oscillations.

Establishing maintenance programmes and stocks of equipment spare parts will enable a long

	<p>life for the cold chain equipment, reducing the needs for equipment investment. Reducing costs on vaccine transportation will allow a better use of the existing limited resources.</p>
<p>Maintenance plan (and its source of funding) and equipment disposal</p> <p><u>Provide 2 pages</u></p>	<p>19. <i>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.)?</i></p> <p>a. <i>What is the frequency of preventative and corrective maintenance that the country commits to (supported by partners)?</i></p> <p>Maintenance requires further strengthening in Uzbekistan, as identified in the EVM assessment and the cold chain inventory and needs assessment. In order to establish an effective maintenance programme, the State SES has prepared a maintenance plan to guarantee vaccine quality and increase cold chain equipment life.</p> <p>The maintenance plan includes establishing qualified maintenance services at the national level with support from equipment manufacturer(s), building capacity of local technicians and users, purchasing replacement parts and providing technicians with tools appropriate to their tasks as well as conducting supervision.</p> <p>Establishing an effective and qualified maintenance programme with support of manufacturer(s) of CCE represents a novel approach in case of equipment procured from UNICEF SD.. During the warranty period (2 years), maintenance will be the responsibility of the equipment manufacturer and will be implemented through a locally established and available qualified service.</p> <p>Maintenance services come at a cost and appropriate budgeting is required to contract them. There are currently various private companies providing cold chain equipment services in Uzbekistan. The locally procured domestic refrigerators benefit from technical support of local suppliers, including the product warranty period. In addition, such services have been previously provided by a parastatal company – Medtehnika. Moreover, qualified cold chain technicians are available within SES system as well as with oblast and district health service. They are part of the health system human resource and could represent an important asset in supporting vaccine cold chain equipment maintenance. A further mapping of available technicians and opportunities for corrective maintenance will be conducted by the MoH and a decision shall be taken before end 2017 (in close cooperation with equipment manufacturer) in regard to the strategy of organizing maintenance services. This way, proper maintenance of equipment will be ensured beyond the warranty period.</p> <p>Equipment installation qualification - Equipment will be installed by a qualified service (as defined by equipment manufacturer) which will assess, document and provide guidance in managing local risks, and make sure that installation follows manufacturer's recommendations. This will include documenting the performance of each installed equipment unit. During this period the manufacturer through its local service provider is also obliged to train staff and local technicians on the use and preventive maintenance of the equipment.</p> <p>Following successful installation of equipment a maintenance programme will be organised in three levels:</p> <p>Preventive Maintenance – aiming reducing the failure risk or performance degradation of equipment (cleaning, inspection, performance checks). Will be provided by users who are trained when the equipment is installed. They will be provided tools, such as SOPs and job aids and will be supervised by SES EPI managers and cold chain technicians from district, oblast or national level.</p> <p>Periodic corrective maintenance (inspecting equipment, servicing and cleaning equipment and replacing parts to prevent sudden failure and process problems, detecting outages, minor breakdowns, etc.). This will be provided by qualified equipment maintenance experts, including SES/ health service cold chain technicians or will be contracted and outsourced to parastatal or private providers.</p> <p>Breakdown corrective maintenance (equipment failure & major repairs): Will be provided by the qualified maintenance programme established with support of manufacturer(s).</p> <p>Standard Operating Procedures (SOPs) and visual aids will be developed to help users correctly perform the various maintenance procedures.</p> <p>Exposure of EPI personnel to maintenance training will improve their vaccine management</p>

	<p>skills, adding to the country's ownership of the programme and sustainability of maintenance.</p> <p><i>b. What technical support is anticipated for maintenance?</i></p> <p>Advocacy for developing a national policy on equipment maintenance and its integration into broader quality assurance frameworks is required.</p> <p>Technical assistance to develop maintenance job aids and standard operating procedures is required.</p> <p>EPI programme needs additional training on organization of maintenance and preventive maintenance and include it into the supervision tools.</p> <p><i>20. How will the country monitor the completion of preventive and corrective maintenance?</i></p> <p><i>a. Which source(s) of funding will be used for maintenance, and to what extent are they assured?</i></p> <p>Preventive maintenance will be monitored during supervision visits by monitoring number of facilities equipped with SOPs and job aids on preventive maintenance as well as assessing workers knowledge and skills..</p> <p>Corrective maintenance will be monitored through the improved data collection and management of the supply chain, including:</p> <p>Data on maintenance organization and effectiveness:</p> <ul style="list-style-type: none"> -Percentage of facilities having a formal agreement for provision of qualified corrective maintenance of CCE on annual base; - Number of facilities per district with refrigerators which have been out of order for more than four weeks <p>Data on monitoring performance of cold chain equipment : Assessing percent of equipped facilities (per level: health facilities, district SES, oblast SES) that have functioning cold chain equipment - on a yearly basis;</p> <p>Data on strengthening temperature monitoring: Number of health facilities with 1 or more alarms for temperatures +10 degrees Celsius per month and per district & Number of health facilities with 1 or more alarms for temperatures below 0.5 degrees Celsius per month and per district</p> <p>Maintenance during the warranty period, training of users and local technicians, as well as procurement of spare parts kits will be financed by the CCEOP funds.</p> <p>Maintenance after the warranty period will be financed from the budget of the Ministry of Health and regional and district health authorities. The Ministry of Health and regional/district health authorities will allocate in their budgets funds for maintenance of all cold-chain equipment through the midterm (three-year) budgetary planning framework starting 2017</p> <p><i>21. How will the country dispose of obsolete and irreparable equipment replaced by CCE optimisation platform equipment?</i></p> <p>The obsolete and irreparable equipment will be recycled to the greatest possible extent, following national legislation. Harvesting spare parts to maintain the existing old but functional equipment will be considered.</p> <p>Further action is required to develop in consultation with the Ministry of Environment guidelines on disposing off obsolete and irreparable equipment.</p>
<p>Other implementation details</p> <p><u><i>Provide 1 page</i></u></p>	<p><i>22. How will the country facilitate the manufacturer's or representative's role in equipment purchase, distribution and installation?</i></p> <p>The Chief State Sanitary Doctor will assign a focal person who will in coordination with the Directorate for Sanitary and Epidemiological Surveillance the MoH and State SES be responsible for deployment of the procured equipment ensuring each piece of equipment reaches its destination in as short time as possible.</p> <p>The contact person will coordinate the custom procedures, transportation, installation of CCE, maintenance during the warranty period and training of responsible EPI staff on use of equipment and proper continuous temperature monitoring and local technical experts on maintenance. The Directorate for Sanitary and Epidemiological Surveillance will assist the focal person.</p>

The focal person will report to the Chief State Sanitary Doctor , Minister of Health, UNICEF and GAVI on the progress of the deployment plan and on any obstacles which may be encountered.

In order to facilitate the customs clearance of imported CCE, a Memorandum of Understanding has been signed by the Ministry of Health and customs authorities.

Since UNICEF is procuring the equipment, it will be exempt from import taxes.

The Ministry of Health will, through the Directorate for Sanitary and Epidemiological Surveillance assist the producer in organizing transport of CCE to the designated facilities, as transport is bundled with procurement of equipment.

The Ministry of Health will outsource preventive and emergency maintenance to an appropriate competent local company, which will be trained by the producer of equipment and ensure maintenance of CCE after the warranty period.

The State SES and Directorate for Sanitary and Epidemiological Surveillance will monitor the cascade process of training of staff responsible for handling the procured CCE and training of local technical experts who will be responsible for maintenance after the warranty period

Equipment will be deployed and installed in the field based on defined priorities. A detailed purchase plan will be prepared and will be reviewed each quarter, based on the projections made by the EPI staff at the MoH,

The MoH, in cooperation with the primary partners, has decided to order the equipment through UNICEF, based on the pre-existing Memorandum of Understanding. Purchasing equipment through UNICEF will allow the country to, on the one hand, benefit from better purchase prices (economy of scale) and on the other hand, to benefit from customs release fees. The equipment ordered through UNICEF using GAVI funds is qualified as “technical assistance” and is exempt from customs duties.

A detailed schedule for purchasing, transporting, distributing and installing the equipment in the field will be prepared, to facilitate rapid implementation of the project.

Equipment will be deployed and installed in the field based on priorities defined in the priorities section.

23. What is the source of the joint investment? Is the country's joint investment secured?

The GAVI HSS support to Uzbekistan has been approved in 2014 and its Objective 1 “Increase performance and sustainability of immunization services” includes a budget dedicated to activity 5 - “Upgrade cold chain equipment” .

Since HSS funds have not become yet operational, in May 2016 the HSS proposal and budget have been updated, including the cold chain component, which took into account findings and recommendations of the conducted cold chain inventory and needs assessment.

The updated budget to activity 5 - “Upgrade cold chain equipment” totals for USD 4,139,780. Additional activities under the Objective 1 cover cold store infrastructure upgrade, renovation and reconstruction, procurement of refrigerated trucks and pick-up vehicles to strengthen vaccine distribution as well as supporting training and supervision activities.

The total CCEOP application budget is USD4,989,190.

In the context of this application, the HSS funds provided by GAVI have been committed to support the country's co-financing for strengthening the immunization supply chain. Through the HSS funds, country will contribute with 50% of the amount of CCEOP proposal (i.e. USD 2,494,595).

The HSS funds in addition will be used to support immunization supply chain rehabilitation, aiming to address the needs at higher level of the immunization supply chain, namely national, regional and district level and vaccine transportation.

The GAVI CCEOP proposal funding opportunity aims to address the needs at the district store and immunisation service delivery level. It will complement the improvement efforts financed through GAVI HSS proposal and will allow a holistic approach in addressing immunization supply chain needs in Uzbekistan.

In addition, WHO and UNICEF are engaged in providing technical assistance to the Ministry of health of Uzbekistan in implementing the EVM improvement plan that would strengthen the supply chain policy, guidance and operations in addition to the improved infrastructure.

Funding for equipment procurement will be allocated through the same mechanism as GAVI HSS funds are. It is expected that funds will disbursed directly to UNICEF SD.

Furthermore, the Ministry of Health and Local health administrations will increase funding for cold chain maintenance, making sure that preventive programmes are performed by trained

users and qualified services for corrective maintenance are secured.

The MoH of Uzbekistan has a long standing experience of procuring vaccines and cold chain equipment using UNICEF SD services. The CCEOP equipment procurement will build up on that experience and will expand it so that procurement of equipment deployment, installation and maintenance service is performed.

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

There is a national legal framework in Uzbekistan allowing import tariff exceptions for goods imported to the country, which are qualified as “technical assistance”, “humanitarian aid” or have a charitable purpose. Procedures are already in place for the goods that are procured with donor’s support through UNICEF SD and having the Ministry of Health as the consignee.

In order to reconfirm the import tariff exemptions for the goods procured with GAVI HSS and CCEOP funds, the MoH has sent a request for clarification to the Customs authorities. In its letter of 04 April 2016, State Customs Committee of the Republic of Uzbekistan confirmed that the existing national legal framework provides provisions for import tariff exemptions and facilities, namely:

- In line with Article 33 of the Law of the Republic of Uzbekistan “On Customs Tariffs”, the goods imported to the customs area of the Republic of Uzbekistan with a view to rendering assistance with regard to natural disasters, armed conflicts, accidents or emergencies, as humanitarian aid and non-refundable technical assistance, as well as goods imported for charitable purposes by states, governments, international organizations. are exempted from customs duties;
- Under Articles 211 and 230 of the Tax Code of the Republic of Uzbekistan, the goods imported for charitable assistance, including technical assistance, by states, governments, international organizations shall be exempt from the value-added tax and the excise tax.
- In line with Resolution of the Cabinet of Ministers of the Republic of Uzbekistan No.204 as of 30 April 1999 “On Customs Rates”, customs duties shall not be collected for customs clearance of goods and vehicles moved across the customs border of the Republic of Uzbekistan as humanitarian aid, gratuitous aid or for charitable purposes, including technical assistance for accident and disaster control.

In line with Resolution of the Cabinet of Ministers of the Republic of Uzbekistan no. 251 of 15.11.2005, technical assistance is qualified as target funding provided by donors free of interest in the form of grants, in-kind and cash for the purchase of equipment and technologies.

4.2 Initial support phase

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

Provide maximum 3 pages, comprising:

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

4.2.1 Prioritised URGENT CCE needs

i	Budgets <u>not inclusive of</u> operational cost (Operational costs to be financed by Ministry of Health or other partners)
	1. The need Please include: Type of activity (e.g. replace obsolete CCE, extend CCE)
Prioritised (URGENT) CCE need 1:	

<p><i>(Required information)</i></p>	<p><i>to unequipped facilities, etc.); specific CCE site (facility); type of equipment required; quantity of equipment items.</i></p> <p>The urgent needs for the initial support, according to type of activity are the following:</p> <p>Establish safe storage capacity at district stores:</p> <ul style="list-style-type: none"> - 790 on-grid ILRs up to 130Lt (VLS350A) to equip District vaccine stores – all have power supply >8 hours (to expand storage capacity and replace obsolete and inadequate equipment) - 34 on-grid ILRs up to 100Lt (VLS300A) to equip district vaccine stores – all have power supply >8 hours (to expand storage capacity and replace obsolete and inadequate equipment) <p>2. Justification <i>Please include: 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.</i></p> <p>Establishing safe storage capacity at district stores will ensure that all vaccines which passed through the district stores are safe and potent when delivered to lower levels and the vaccines. This will also allow implementing proper stock management and observing safety stock policy, ensuring timely and full availability; Not addressing bottlenecks at this level would have a severe impact on vaccine availability and potency at service delivery sites.</p> <p>3. Expected outcome <i>Please include: Anticipated increase in CCE and immunisation coverage (Penta3); anticipated progress against identified inequity (describe, <u>in alignment with country Performance framework</u>).</i></p> <p>Safe vaccine storage capacity established at the district store level to address current and future vaccine</p> <p>The effectiveness of procurement of CCE will be better measured in outcomes related to the problems documented by EVMA and cold chain assessment,, i.e.having sufficient storage capacity, reducing vaccine transport costs, maintaining a safety stock and preventing vaccine stock-outs.</p> <p>That will allow immunization providers to have continuous access to safe and potent vaccines, to prevent stock outs and support building the trust to the quality and safety of vaccines and demand in immunization services.</p>
<p>Total CCE Budget:</p>	<p><i>'Total budget' includes Gavi and country joint investment share: \$ 472,408</i></p>
<p><i>Prioritised (URGENT) CCE need 2:</i></p>	<p><i>The need; Justification; Expected outcome</i> <i>(See guidance as per prioritised need 1, above)</i></p> <p>The second priority is supplying ILRS with power supply 8-16 hours a day – newly supplying or replacing domestic refrigerators.</p> <ul style="list-style-type: none"> - 790 on-grid ILRs up to 60Lt (VLS200A) to equip PHC facilities providing immunization services. Of them 785 units to equip PHC facilities with power supply 8-16 hours a day <p>The number of these facilities is large; Most of them do use domestic refrigerators and have experience on providing fixed immunization services. In addition efficient and effective solutions are available (ILRs) and can bring immediate result. This will allow improving dramatically</p>

	the quality, safety of vaccines and timeliness of immunization in a large proportion of the birth cohort.
Total CCE Budget:	\$ 976,440
<i>Prioritised (URGENT) CCE need 3:</i>	<p>The need; Justification; Expected outcome (See guidance as per prioritised need 1, above)</p> <p>Supplying solar direct drive refrigerators to key facilities (at list 25 percent of that in need) which have insufficient electrical supply (facilities with less than 8 hours supply of electricity per day).</p> <ul style="list-style-type: none"> - 105 SDD refrigerators up to 60Lt (VLS054 Green line) to equip facilities with power supply less than 8 hours a day; <p>This type of refrigerators is mostly designated to facilities in remote and hard to reach areas. This will allow establishing continuous access to vaccines and safe immunization services.</p> <p>Experience on installing and using this new technology will be accumulated to decide on the effectiveness of its further expansion.</p>
Total CCE Budget:	\$ 397,950
<i>Prioritised (URGENT) CCE need 4:</i>	<p>The need; Justification; Expected outcome (See guidance as per prioritised need 1, above)</p> <ul style="list-style-type: none"> - 1,124 voltage regulators to be provided bundled with new equipment; - 2,200 units of 30-day continuous temperature monitoring devices (in addition to devices bundled with new equipment) to initiate continuous temperature monitoring; - 150 sets of spare parts for CCEOP equipment to establish a stock of spare parts for all types of the supplied CCEOP equipment.
Total CCE Budget:	\$ 204,534
GRAND TOTAL CCE BUDGET: 'Initial support' (Years 1 and 2)	<p>\$ 2,051,332 <i>Includes Gavi and joint investment share.</i></p>

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

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

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

Supply chain managers

Provide description of all planned or ongoing activities related to improving the availability and performance of supply chain managers, their sources of funding, and partner support.

HSS activities, in particular under the objectives # 2 and #4 will provide support to strengthening other supply chain fundamentals, including supply chain management and data for evidence based decision making.

The HSS funds will contribute to investment in human resources in charge of management of health facility (SVPs in rural areas), financial managers, deputy head doctors (in charge of medical practices) and chief nurses in charge of medical practices of nurses and forecasting requirements in vaccines and injection supplies); Supportive supervision ensuring that acquired managerial skills are applied correctly as well as managerial and clinical practices are consistent with regulatory requirements; and information sharing and experience learning through organizing annual national conferences on immunization and MCH services and study tours of PHC and SSES managers.

The aforementioned activities are funded by the MoH and will be facilitated by the HSS funds.

Additionally, by the CCEOP support training of supply chain managers will be provided by the CCE producer/distributor on usage, maintenance of equipment, cold chain management, temperature monitoring and stock management.

This is in line with recommendations given in the EVM improvement plan (E5. Store managers and immunization facility responsible staff should be trained and refreshed at least once a year on preventive cold chain equipment maintenance; E6. Minimum, maximum stock and reorder levels should be set for each facility and effort should be undertaken to monitor stock levels and maintain them within Min/Max levels; E8. The distribution schedule shall be developed and implement for all stores; E9. Organize standard WHO Vaccine Management Training Courses for staff at all levels with focus on using new temperature monitoring equipment and tools, estimating wastage rates in opened and unopened vials and conducting Shake test)

Data for supply chain management

Provide description of all planned or ongoing activities related to data for management, their sources of funding, and partner support. In particular, please 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.

The HSS Objective 4 “4. Strengthen data collection and reporting for MCH and preventive services” will provide funding support to: develop functional and user requirements for vaccine LMIS, develop and deploy software, procure and install hardware, train medical and managerial staff in using new HMIS modules, training high level specialists in analysis and reporting and conduct data validation. HSS funds are allocated to developing a national computerized system of vaccine stock management which will ensure automatic registration of in/outflow of vaccines from national, oblast and rayon level stores, monitoring of storage conditions, stock management: the hardware and software developed by local IT teams will be installed in all vaccine stocks. However, , without adequate stock management at the health facility level, stock management information at higher levels of the supply chain (district province, national) does not provide informative data for planning. Procurement of eligible CCE equipment will allow stock management at health facility level to be incorporated into the overall vaccine stock management system and provide information necessary for supply chain management, planning and distribution. In addition, the Cold Chain Equipment Manager (CCEM) has been used to conduct cold chain inventory in Uzbekistan and is available for further updates and use to inform cold chain equipment management needs. A process of systematic updating of the status of the cold chain equipment is expected to be established at regional and district level.

Optimised, efficient design of distribution system

Provide description of all planned or ongoing activities related to distribution system design optimisation, their sources of funding, and partner support.

The vaccine distribution system in the country has been well structured, following health system organization. However, introduction of new vaccines, switching to lower dose presentations and increased use of non-routine vaccines (i.e. influenza vaccine, hepatitis A, rabies vaccine) brings new challenges to the immunization supply chain. This will double the vaccine volume in the next five to ten years – up to 464.3 cm³ per fully immunized child.

Transport of vaccines will also be challenged by the increased vaccine volumes.

Consequently, the existing distribution system, is threatened to accomplish its essential functions – ensuring continuous access to assured quality vaccines in a sustainable manner. Currently the immunization supply chain is not effective – because its storage and transport capacity does not accommodate the required vaccine amounts and furthermore, its operation is neither efficient – because of excessive efforts and resources required to handle individual shipments, rather than

having in place distribution programmes for all needed vaccines.

The EVM 2015 and cold chain rehabilitation plan address the need to redesign both vaccine storage and transport system to align them with the current and future needs.

A detailed cold chain capacity and needs assessment has been performed at national, regional and district level, establishing long term storage and transport capacity needs, assessing the capacity gap and proposing solutions to address the gaps. The analysis shows that

- Vaccine storage capacity needs important expansion at national, sub-national and district level;
- Storage models have to change at national and sub-national vaccine stores to cope with significantly increased volumes of vaccines;
- Current vaccine transportation model based on vaccine collection using cold boxes from the national level down to regional and district level involves vulnerabilities, uncontrolled risks and inequities. Furthermore its expansion requires important investment in both cold boxes and transport means. An alternative vaccine distribution model is proposed, empowering regions with the responsibility to collect vaccines from the national store and distribute it to all district stores using refrigerated trucks. This will allow better control over the vaccine quality during distribution, coping with increased transport needs, using more efficiently resources and strengthening the overall management and accountability over the vaccine distribution. In addition, each district store will be equipped through HSS with a pickup vehicle to distribute centrally vaccines to all immunization service providers, which will allow both improving management of the vaccine supply, reducing access related inequities, and strengthening supervision programmes.

The comprehensive cold chain rehabilitation plan includes building a new national vaccine store, refurbishing regional and district stores, changing the vaccine transport model (refrigerated truck owned by regions used to transport vaccines from national to the district level and districts establishing central distribution to the immunization delivery sites) and investing in personnel.

The shortage of cold storage capacities is an impediment to implement EVM recommendations pertinent to distribution system design (E6. Minimum, maximum stock and reorder levels should be set for each facility and effort should be undertaken to monitor stock levels and maintain them within Min/Max levels; E8. The distribution schedule shall be developed and implemented for all stores).

Additionally, the Comprehensive Multi-year Plan 2016-2020 specifically incorporates reaching the “unreached” population as part of the Reaching Every District (RED) strategy with the objective of strengthening district capacity through 5 components. The most important component will be directly addressed by the CCEOP support: Re-establishing outreach services (by ensuring cold storage capacity and temperature monitoring devices at health facility level).

CCEOP support will allow deploying adequate technology to addressing risk and limitations related to limited storage capacity and access to grid power supply at district level and service delivery sites and will expand cold chain equipment to new immunization sites.

HSS support will further expand to strengthen vaccine storage at national and sub-national levels, as well as strengthening the vaccine distribution at all levels of the immunization supply chain.

In addition the established CCEM database allows identifying facilities for priority support, since, in addition to cold chain equipment data, it includes important facility information such as the size of the target group, access to power supply, distance and time to the vaccine collection point.

Continuous improvement process

Provide description of all planned or ongoing activities related to continuous improvement processes, their sources of funding, and partner support.

The improvement plan following the EVM assessment in November 2015 recommended that the country:

- Develop SOPs in line with nine EVM criteria's for each level in the immunisation supply chain (use the WHO recommended EVM SOP templates)
- Establish a quality management system, including definition of roles and responsibilities and development/updating of SOPs for each task to be performed at each of the levels of the vaccine supply chain.

These activities will to be supported by Gavi HSS funds and with WHO technical assistance and are a significant part of the continuous improvement process.

In the cMYP the Reaching Every District (RED) strategy identifies the need for supportive supervision and planning and management of resources which will directly add to continuous improvement of

vaccine management and ensure sustainability of quality of the vaccine distribution system. WHO and UNICEF technical assistance will be needed to guide supportive supervision through preparation of supervision materials and training of supervisors. Strengthening managerial skills and data management in the supply chain will allow monitoring progress and identifying further areas requiring action.

4.3 Reviewing implementation of initial support activities

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

4.4 Scale-up support phase

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

Provide maximum 3 pages, comprising:

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

4.4.1 Prioritised ADDITIONAL CCE needs

i Budgets <u>not inclusive</u> of operational cost (Operational costs to be financed by Ministry of Health or other partners)	
Prioritised (ADDITIONAL) CCE need 1: (Required information)	<p>1. The need Please include: 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.</p> <p>During the scale up stage focus will be on continuing addressing needs of facilities with limited access to power supply and replacing inadequate CCE (domestic refrigerators and ILRs older than 15 years) in order to improve the reliability of the supply chain.</p> <ul style="list-style-type: none">a. Finalizing establishing safe storage capacity and replacing obsolete and inadequate equipment at district level to accommodate introduction of new vaccines)<ul style="list-style-type: none">- 194 on-grid ILRs up to 130Lt (VLS350A) to equip District vaccine stores – all have power supply >8 hours (to expand storage capacity and replace obsolete and inadequate equipment)- 194 voltage regulators to be provided bundled with new equipment;b. Continuing supplying solar direct drive refrigerators to medium size facilities (50 children under one) which have insufficient electrical supply (facilities with less than 8 hours supply of electricity per day).<ul style="list-style-type: none">- 50 SDD refrigerators up to 60Lt (VLS054 Green line) to equip facilities with power supply less than 8 hours a day;c. Continuing the replacement of obsolete and inadequate equipment in facilities providing immunization services<ul style="list-style-type: none">- 415 on-grid ILRs up to 60Lt (VLS 200A Green Line) to equip PHC facilities providing immunization services (to replace domestic refrigerators and outdated ILRs in large facilities and facilities potentially exposed to power supply shortages;

	<ul style="list-style-type: none"> - 415 voltage regulators to be provided bundled with new equipment; <p>d. Establishing the stock of spare parts to support the corrective maintenance programme</p> <ul style="list-style-type: none"> - 50 sets of spare parts for VLS 350A refrigerators supplied earlier to establish a stock of spare parts for platform eligible ILRs <p>2. Justification Please include: Reasons for additional CCE 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.</p> <p>Gradual expansion of safe cold chain equipment and devices is envisaged during this phase of support to allow establishing continuous access to safe immunization services at medium size facilities and will also allow using them as storage HUBs for smaller facilities in their areas.</p> <p>This will build up on the experience on installing and using this new technology accumulated during the first stage of the project.</p> <p>Should the power supply improve in the country and the number of facilities requiring autonomous sources decrease, the number of procured equipment will be revisited accordingly.</p> <p>3. Expected outcome Please include: Anticipated increase in CCE and immunisation coverage (Penta3); anticipated progress against identified inequity (describe, <u>in alignment with country Performance framework</u>).</p> <p>Gradual increase of percentage of target birth cohort served by prequalified CCE.</p> <p>Proportion of immunization delivery sides equipped with functional ILRs to reach 46%</p>
Total CCE Budget⁵:	<i>'Total budget' includes Gavi and country joint investment share: \$ 1,046,649</i>
<i>Prioritised (ADDITIONAL) CCE need 2:</i>	<p>The need; Justification; Expected outcome (See guidance as per prioritised need 1, above)</p> <ul style="list-style-type: none"> a. Continuing supplying solar direct drive refrigerators to medium to small size facilities (15 children under one) which have insufficient electrical supply (facilities with less than 8 hours supply of electricity per day). <ul style="list-style-type: none"> - 45 SDD refrigerators up to 60Lt (VLS054 Green line) to equip facilities with power supply < 8 hours a day; b. Continuing the replacement of obsolete and inadequate equipment in facilities providing immunization services <ul style="list-style-type: none"> - 490 on-grid ILRs up to 60Lt (VLS 200A Green Line) to equip PHC facilities providing immunization services (to replace domestic refrigerators and outdated ILRs in large facilities and facilities potentially exposed to power supply shortages; - 490 voltage regulators to be provided bundled with new equipment; c. Expanding the use of 30DTRs to all facilities providing immunization services; <ul style="list-style-type: none"> - 2,000 units of 30-day continuous temperature monitoring

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

	<p>devices (in addition to devices bundled with new equipment);</p> <p>d. Establishing the stock of spare parts to support the corrective maintenance programme</p> <ul style="list-style-type: none"> - 5 sets of spare parts for VLS 300A refrigerators supplied earlier to establish a stock of spare parts for platform eligible ILRs <p>Expected outcome: Proportion of immunization delivery sides equipped with functional ILRs to reach 62% Continuous temperature monitoring ensured at all levels will allow improving documenting of temperature excursions, identify equipment failures, guide equipment maintenance or replacement and contribute significantly to maintaining vaccine potency.</p>
Total CCE Budget:	\$ 886,953
<i>Prioritised (ADDITIONAL) CCE need 3:</i>	<p><i>The need; Justification; Expected outcome</i> <i>(See guidance as per prioritised need 1, above)</i></p> <p>a. Continuing the replacement of obsolete and inadequate equipment in facilities providing immunization services</p> <ul style="list-style-type: none"> - 520 on-grid ILRs up to 60Lt (VLS 200A Green Line) to equip PHC facilities providing immunization services (to replace domestic refrigerators and outdated ILRs in large facilities and facilities potentially exposed to power supply shortages; - 520 voltage regulators to be provided bundled with new equipment; <p>b. To replace equipment reaching 15 years of service and ensure further equipment reliability and quality of vaccine storage</p> <ul style="list-style-type: none"> - 200 on-grid freezers up to 300Lt (MF314) to equip District vaccine stores – to replace obsolete equipment; - 200 voltage regulators to be provided bundled with new equipment; <p>c. Establishing a stock of temperature devices to replace equipment coming to the end of its life</p> <ul style="list-style-type: none"> - 2,600 units of 30-day continuous temperature monitoring devices (in addition to devices bundled with new equipment) to replenish the device stock every 3 years; <p>d. Establishing the stock of spare parts to support the corrective maintenance programme</p> <ul style="list-style-type: none"> - 20 sets of spare parts for CCEOP equipment (MF314) to establish a stock of spare parts for all types of the supplied CCEOP equipment. <p>Expected outcome: Proportion of immunization delivery sides equipped with functional ILRs to reach 75% Stock of continuous temperature monitoring devices replenished to ensure continuous temperature monitoring for the next 3 years National stock of spare parts for all categories of procured cold chain equipment established to sustain equipment corrective maintenance;</p>
Total CCE Budget:	\$ 1,004,257
<i>Prioritised (ADDITIONAL) CCE need 4:</i>	<p><i>The need; Justification; Expected outcome</i> <i>(See guidance as per prioritised need 1, above)</i></p>
Total CCE Budget:	\$(XX)

**GRAND TOTAL CCE BUDGET: 'Scale-up support'
(Year 3, 4, 5)**

\$ 2,937,859

Includes Gavi and joint investment share.

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

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

support phase

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

Supply chain managers

Provide description of all planned activities related to improving the availability and performance of supply chain managers, their sources of funding, and partner support.

Ongoing trainings performed by CCEOP equipment installers will allow strengthening capacity of both supply chain users and their managers.

In addition, trainings provided through the HSS project will allow expanding training opportunities beyond the facilities benefiting from CCEOP support.

Developments in the immunisation logistics data management system will represent another opportunity to strengthen evidence based decision making and monitoring performance.

Data for supply chain management

Provide description of all planned activities related to data for management, their sources of funding, and partner support. In particular, please 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.

Same as in the initial phase.

Development and implementation of the national computerized system of vaccine stock management will ensure automatic registration of in/outflow of vaccines from national, oblast and rayon level stores, monitoring of storage conditions, stock management. Incorporating stock management data from health facility level into the overall vaccine stock management system will provide information necessary for supply chain management, planning and distribution.

In addition, systematic updating and use of the Cold Chain Equipment Manager (CCEM) database will improve significantly quantity and quality of data describing functioning of the system and the functional status of equipment.

Optimised, efficient design of distribution system

Provide description of all planned activities related to distribution system design optimisation, their sources of funding, and partner support.

Same as in the initial phase.

Cold chain rehabilitation plan is a 5 year project and during the years 3-5 activities to support optimization of the system will continue using HSS and CCEOP support.

Continuous improvement process

Provide description of all planned activities related to continuous improvement processes, their sources of funding, and partner support.

Same as in the initial phase.

An EVM assessment is planned to be conducted in 2018 to document improvements and identify areas of further action to strengthen immunization supply chain;



This will further inform the country cMYP, HSS activities and other sector-wide policy and planning.

5. BUDGET TEMPLATES

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

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

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

<div style="display: flex; align-items: center; justify-content: center;"> <div style="border: 1px solid black; border-radius: 50%; width: 30px; height: 30px; display: flex; align-items: center; justify-content: center; margin-right: 10px;">i</div> <div> <p>Important information: selection of budget template</p> <ul style="list-style-type: none"> • Countries can fill <u>one of two</u> CCE optimisation platform Budget Templates: <ul style="list-style-type: none"> ○ Either budget template number 01; ○ Or budget template number 02 </div> </div>	
<p>CCE optimisation platform -Budget Template <u>01</u> (strongly encouraged)</p>	
<p><i>To be filled by countries that have selected generic equipment categories that best suit their CCE needs (e.g. 'ILR 90L' i.e. Not specific model or make).</i></p> <p><i>Planning price ranges are provided in this template.</i></p>	 <p>Budget Template 01 Generic CCE.xlsx</p>
<p>CCE optimisation platform -Budget Template <u>02</u></p>	
<p><i>To be filled by countries that have selected specific equipment that best suit their CCE needs (e.g. specific model and make).</i></p> <p><i>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).</i></p> <p><i>Planning price ranges are provided in this template.</i></p>	 <p>Budget Template 02 Specific CCE.xlsx</p>

6. PERFORMANCE FRAMEWORK

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

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

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

Data sources

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

- DHIS2
- DVDMT
- HMIS
- WHO/UNICEF joint reporting form (JRF)
- Health facility assessments that include cold chain
- Vaccine stock ledgers
- Wastage reporting tools
- Cold chain equipment inventories
- On-site assessments of equipment functioning
- Routine monitoring with continuous temperature monitoring devices

Indicator monitoring and reporting requirements

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

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

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

1. Number of equipped facilities replacing CCE with (any) platform-eligible ILR, SDD or long-term passive devices, and irrespective of their funding source;
2. Number of facilities previously without equipment, newly equipped with platform-eligible equipment (i.e. ILRs, SDDs or long-term passive devices); and
3. Well-defined indicator proposed by country to reflect appropriate maintenance of equipment; for example percentage of equipped facilities with functioning cold chain⁶, such as demonstrated by remote temperature monitoring.

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 stock 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

⁶ **Indicator definition:** $\% \text{ CCE functioning} = (\# \text{ functioning CCE devices}) / (\text{total \# of CCE devices designated for use})$. 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.

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.

Success in the implementation of the GAVI CCEOP project proposal depends on the capacity of the MoH to manage the process, monitor the progress and assess and identify potential strengths and needs for further improvement. It will require establishing a proper monitoring and evaluation system.

At the moment, the country collects the following information related to cold chain equipment:

- Type of CCE installed
- Working condition of installed CCE
- Electrical supply (hours of electrical supply per day)
- Open vial vaccine wastage
- Unopened vial vaccine wastage
- Vaccination coverage

This information is collected in written reports from health facilities, districts and oblasts, and validation of accuracy is performed through supportive supervision visits.

To strengthen monitoring of this project implementation, and to address main constraints of the immunization supply chain, additional indicators will be defined and monitored. All activities related to this project and their impacts will be monitored using specific indicators. Tools to collect and analyse data on project implementation on a monthly, quarterly, or annual basis will be developed.

The indicators that will be additionally collected and analysed for the purpose of monitoring and evaluation of the project are outlined into the following six areas:

Governance (G):

- G1. National steering committee for CCEOP implementation established, including MoH structures, UNICEF, WHO and other potential partners;
- G2. Focal points for CCEOP implementation designated and responsibility defined at national, oblast and district level;
- G3. Number of coordination meetings conducted by the National steering committee;
- G4. National policy/requirements adopted for budget allocation for maintenance of CCE;

Equipment purchase and rollout (E)

- E1. Number of equipment units procured, as compared to the projected number
- E2. Number of equipment units installed, as compared to the projected number
- E3. Number & percentage of equipped facilities replacing cold chain equipment with adequate PQ equipment;
- E4. Number & percentage of previously unequipped facilities that were equipped with optimal PQ cold chain equipment

Performance monitoring of cold chain equipment (P)

- P1. Submission of an updated CCE inventory on a yearly basis;
- P2. Percent of equipped facilities (per level: health facilities, district SES, oblast SES) that have functioning cold chain equipment;
- P3. Proportion of equipment meeting PQS standards, as compared to initial levels (cold chain inventory 2016).
- P4. Average equipment age & percentage distribution of CCE with the age exceeding the product life cycle.

Temperature monitoring (T)

- T1. Number of health facilities which received continuous temperature monitoring devices
- T2. Number of health facilities with 1 or more alarms for temperatures +10 degrees Celsius per month and per district
- T3. Number of health facilities with 1 or more alarms for temperatures below 0.5 degrees Celsius per month and per district

Maintenance (M)

- M1. Number of facilities equipped with SOPs and job aids on preventive maintenance.
- M2. Percentage of facilities having a formal agreement for provision of qualified corrective maintenance of CCE on annual base;
- M3. Number of facilities per district with refrigerators which have been out of order for more than four weeks

Capacity building (C):

- C1. Number & percentage of EPI staff trained in use and preventive maintenance of new refrigerators
- C2. Number & Percentage of EPI staff trained in use of continuous temperature monitoring devices
- C3. Number & Percentage of local technical experts trained in corrective maintenance of refrigerators.

A database which will expand on the existing cold chain inventory will be operated by the Directorate for Sanitary and Epidemiological Surveillance and will be updated quarterly.

In the context of this application, a reporting system will be implemented in order to monitor supply chain strengthening. The MoH, through the Directorate for Sanitary and Epidemiological Surveillance and with partners support will be responsible for preparing and adopting various reports, as well as providing guidance and training for their completing.

An overall progress annual report will be produced in order to monitor the progress and identify areas for further action and improvement. Quarterly review of the progress will be performed by the CCEOP steering committee based on monthly and quarterly reporting. Monthly compilation, analysis and action will be performed by the Directorate for Sanitary and Epidemiological Surveillance and its district and oblast level structures.

The various reports that are prepared will be presented and discussed at CCEOP steering committee meeting and the ICC before being shared with all partners and GAVI. Financial reports will be done according to GAVI's usual procedures.

The technical entity responsible for installing all cold chain equipment purchased in the context of the platform (the producer), will also provide quarterly reports detailing all of the activities conducted.

CCEOP performance monitoring will be aligned with HSS performance monitoring framework. In addition, a follow up EVM assessment will be conducted in 2019 to document the performance of the immunization supply chain in a structured manner and will allow assessing outcomes of the project.

Details in regard to setup of the CCEOP monitoring framework of specific indicators are provided below:

CCE platform indicator	Description of plan to report on indicator (incl., baseline, data source, data collection/validation, reporting frequency)
Global CCEOP indicators	
E3. Number of equipped facilities replacing CCE with platform-eligible equipment	Baseline: 2016 cold chain equipment inventory. Notification to the district focal point each time equipment is installed to update the CC inventory

(ILR, SDD or long-term passive devices)	<p>Regular summary data updates by all levels will be performed on quarterly basis</p> <p>Supervised by and compared to plans by Directorate for Sanitary and Epidemiological Surveillance and its district and oblast level structures.</p> <p>Annual reports on this indicator will be submitted, based on the quarterly reports, regular updates on the CCE inventory, and supervisory visits.</p>
E4. Number of facilities previously without equipment, newly equipped with platform-eligible equipment (ILR, SDD or long-term passive device)	<p>Baseline: 2016 cold chain equipment inventory.</p> <p>Notification to the district focal point each time equipment is installed to update the CC inventory</p> <p>Regular summary data updates by all levels will be performed on quarterly basis</p> <p>Supervised by and compared to plans by Directorate for Sanitary and Epidemiological Surveillance and its district and oblast level structures.</p> <p>Annual reports on this indicator will be submitted, based on the quarterly reports, regular updates on the CCE inventory, and supervisory visits.</p>
P2. Percentage of equipped facilities with functioning cold chain	<p>Baseline: 2016 cold chain equipment inventory.</p> <p>Monthly reporting of the status of functioning of CC equipment</p> <p>Updates will be performed following notifications of equipment installation or equipment failure</p> <p>Supervised by and compared to plans by Directorate for Sanitary and Epidemiological Surveillance and its district and oblast level structures.</p> <p>Annual reports on this indicator will be submitted, based on the update CC inventory</p>
P1. Submission of yearly updated CCE inventory	<p>Supervised by Directorate for Sanitary and Epidemiological Surveillance and its district and oblast level structures.</p> <p>Annual report based on cold chain equipment inventory updates and supervisory visits.</p>
Country specific indicators	
G1. National steering committee for CCEOP implementation established, including MoH structures, UNICEF, WHO and other potential partners	<p>MOU for establishing the national steering committee for CCEOP implementation established signed by MoH and partners</p>
G2. Focal points for CCEOP implementation designated and responsibility defined at national, oblast and district level	<p>MoH order issued to designate focal points for CCEOP implementation at national, oblast and district level and define their responsibility</p> <p>Supervised by Directorate for Sanitary and Epidemiological Surveillance.</p>
G3. Number of coordination meetings organised	<p>Number of coordination meetings of State SES, Directorate for Sanitary and Epidemiological Surveillance and partners (UNICEF), organised per year. Will be reported annually.</p>
G4. National policy/requirements for budget allocation for maintenance adopted and implemented	<p>MoH order issued establishing requirements for budget allocation for maintenance of CC equipment</p> <p>Supervised by the Department of finance of MoH and Directorate for Sanitary and Epidemiological Surveillance.</p> <p>Annual reports on this indicator will be submitted in alignment</p>

	with annual and midterm budgeting framework
E1. Number of equipment units procured, as compared to the projected number	<p>Annual projections and quarterly updates on procurement and receipt of equipment at the national level; Reviewed by the national steering committee Supervised by Directorate for Sanitary and Epidemiological Surveillance.</p> <p>Annual reports on this indicator will be submitted, based on the quarterly updates. The report will be used to inform next year procurement planning.</p>
E2. Number of equipment pieces installed, as compared to the projected number	<p>Number of equipment (refrigerators) pieces installed, as compared to the projected number, per blast and per district. Notification to the district focal point each time equipment is installed to update the CC inventory Regular summary data updates by all levels will be performed on quarterly basis Supervised by and compared to plans by Directorate for Sanitary and Epidemiological Surveillance.</p> <p>Annual reports on this indicator will be submitted, based on the quarterly reports, regular updates on the CCE inventory, and supervisory visits.</p>
P3. Proportion of equipment meeting PQS standards, as compared to initial levels and average equipment age (cold chain inventory 2016)	Data will be collected through the Cold-chain inventory and will be reported annually.
P4. Average equipment age & percentage distribution of CCE with the age exceeding the product life cycle	Data will be collected through the Cold-chain inventory and will be reported annually.
T1. Number of health facilities which received continuous temperature monitoring devices	<p>Baseline: 2016 cold chain equipment inventory. Updates will be performed following notification s of equipment distribution and installation Regular summary data updates by all levels will be performed on quarterly basis Supervised by and compared to plans by Directorate for Sanitary and Epidemiological Surveillance and its district and oblast level structures.</p> <p>Annual reports on this indicator will be submitted, based on the quarterly reports, regular updates on the CCE inventory, and supervisory visits.</p>
T2. Number of health facilities with 1 or more alarms for temperatures +10 degrees Celsius per month and per district	<p>Temperature monitoring records will be updated to record the alarm status Notification of alarm status to upper level will be instituted Monthly reporting of alarm events throughout all supply chain levels will be instituted. Quarterly review of alarm events and corrective action taken will be conducted at district, oblast and national level.</p>
T3. Number of health facilities with 1 or more alarms for temperatures below 0.5 degrees Celsius per month and	<p>Temperature monitoring records will be updated to record the alarm status Notification of alarm status to upper level will be instituted Monthly reporting of alarm events throughout all supply chain</p>

per district	<p>levels will be instituted.</p> <p>Quarterly review of alarm events and corrective action taken will be conducted at district, oblast and national level.</p>
M1. Number of facilities equipped with SOPs and job aids on preventive maintenance.	<p>Data will be collected through the Cold-chain inventory annual update and during supervision visits.</p> <p>The indicator will be reported annually by levels and categories of facilities.</p>
M2. Percentage of facilities having a formal agreement for provision of qualified corrective maintenance of CCE on annual base;	<p>Data will be collected through the Cold-chain inventory annual update and during supervision visits.</p> <p>The indicator will be reported annually by levels and categories of facilities.</p>
M3. Number of facilities per district with refrigerators which have been out of order for more than four weeks	<p>An immediate notification system for refrigerators which have got out of order will be instituted to the State SES</p> <p>Monthly reporting of the functional status of CCE will be instituted by each level and will be linked to vaccine supply distribution decision making.</p> <p>Data will be validated through review of temperature alarms and recordings during supervision visits.</p>
C1. Number & percentage of EPI staff trained in use and preventive maintenance of new refrigerators	<p>User trainings will be included in the responsibility of the producer of equipment and the company which will provide in-country equipment installation services.</p> <p>Training schedule will follow the equipment deployment plan.</p> <p>The EPI managers at all levels will keep records of staff who needed and who finished the training.</p> <p>Quarterly updates of the indicator will be performed along with equipment installation reports.</p>
C2. Number & Percentage of EPI staff trained in use of continuous temperature monitoring devices	<p>Trainings on use of continuous temperature monitoring devices will be based on updated temperature monitoring guidelines, SOPs and temperature recording tools. It will be conducted by EPI following a cascade approach. Training will precede the temperature monitoring equipment deployment plan</p> <p>EPI managers at national/oblast/district level will keep records of number and percentage of EPI staff trained.</p> <p>The completion of training will be reported in the corresponding quarterly report.</p>
C3. Number & Percentage of local technical experts trained in corrective maintenance of refrigerators.	<p>Equipment manufacturer will provide maintenance training to a local service provider at the national level.</p> <p>The number of local technicians to be trained will be defined following the agreement of the MoH on the equipment maintenance strategy (i.e. in-house vs outsourced services)</p> <p>The EPI manager will keep records of local technical experts who needed and who finished the training.</p> <p>The completion of training will be reported in the corresponding quarterly report.</p>