



MINISTRY OF PUBLIC HEALTH

SECRETARIAT GENERAL

GENERAL DIRECTORATE OF

DIRECTORATE FOR THE EXPANDED PROGRAMME ON IMMUNISATION

**Application for support from the cold chain
optimisation platform, September 2016 (only)**

September 2016





ACRONYMS

BSD - Bureau de la Santé du District / DHO District Health Office
BCG - Tuberculosis vaccine
bVPO –Bivalent Oral Polio Vaccine
ICC - Inter-Agency Coordinating Committee for Vaccination
HSCC - Health System Coordinating Committee
BHC - Basic Health Centre
DTP - Diphtheria, tetanus and pertussis vaccine
DVDMT - Immunisation Data Management Tool in the Districts
CCE - Cold chain equipment
GAVI - Gavi Global Alliance for Vaccines and Immunisation
EVM - Effective vaccine management
GSM - Global System for Mobile Communications
HPV - Human papilloma virus vaccine
IPV - Inactivated polio vaccine
MINSAP - Ministry of Public Health
WHO - World Health Organization
PCV10 - Pneumo Conjugate vaccine
Penta - Pentavalent vaccine
EPI - Expanded Program on Immunization
cMYP: Comprehensive Multi-Year Plan
PQS - Performance, Quality and Safety (WHO standards)
ILR - Ice-lined refrigerator
Rota (RV) - Rotavirus vaccine
HSS - Health System Strengthening
SDD (Direct solar energy refrigerator (operates on solar power without a battery)
UNICEF - United Nations Children's Fund
MCV - Measles-containing vaccine
Td - Tetanus Toxoid Vaccine

Application for support for the cold chain optimisation platform, September 2016 (only)

This form has been prepared for countries submitting an application for support from the Cold Chain Equipment (CCE) optimisation platform of the Gavi Alliance ("the platform") in September 2016.

Countries that are filing an application are advised to consult the documents and resources listed below:

	The instructions relating to HSS support applications are available at the following address: http://www.gavi.org/soutien/demandes/
	The instructions relating to support applications for the CCE optimisation platform are available at the following address: www.gavi.org/support/apply
	The technical guide relating to the selection of the equipment for the support applications for the CCE optimisation platform are available at the following address: http://www.gavi.org/support/hss/cold-chain-equipment-optimisation-platform/
	Numerous technical resources relative to the management of the cold chain equipment for the storage of vaccines are available on TechNet-21: http://www.technet-21.org/en/resources/cold-chain-equipment-management

In addition

	Indicates important information provided in this application form
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1. INFORMATION ABOUT THE APPLICANT

1 INFORMATIONS CONCERNANT LE DEMANDEUR

Pays	MADAGASCAR	
Date	01 Septembre 2016	
Nom de contact	Dr Mihangy Lahimasy	
Adresse de courriel	mihangy@gmail.com	
Téléphone	+261332350203	
Financement total demandé à la plateforme d'optimisation de l'ECF (BUS)	Ce montant doit correspondre exactement au budget demandé dans le modèle intégré. US\$ 12,853,211	
Votre pays dispose-t-il actuellement d'une subvention RSS de Gavi approuvée ?	Oui <input checked="" type="checkbox"/>	Non <input type="checkbox"/>
	Indiquez la dernière année anticipée de soutien RSS : 2019	
Date de début proposée pour l'allocation de la plateforme d'optimisation ECF :	Indiquer le mois et l'année de la date de début prévue pour l'allocation d'après le plan de déploiement stratégique : Août 2017	
Date de fin proposée pour l'allocation de la plateforme d'optimisation de l'ECF :	Indiquer le mois et l'année de la date de fin prévue pour l'allocation d'après le plan de déploiement stratégique : Décembre 2018 (pour le Soutien initial)	
<p>Signatures Comprendre la validation de la demande de plateforme d'optimisation de l'ECF signée (et officielle) par :</p> <p>a) Le ministre de la Santé et le ministre des Finances (ou représentants désignés)</p> <p>b) les membres du CCSS/CEI ou comité équivalent ainsi que le procès-verbal signé des réunions durant lesquelles la demande a été approuvée</p> <p>Dans le cas de demandes de soutien au RSS ou de plateforme d'optimisation de l'ECF, le procès-verbal doit montrer que ces deux sujets ont été abordés et approuvés</p>	<p>Nous, soussignés, affirmons que les objectifs et les activités de la proposition à Gavi sont parfaitement alignés sur le plan stratégique national de santé (ou son équivalent) et que les fonds pour la mise en œuvre de toutes les activités, y compris les fonds nationaux et tout investissement conjoint requis, seront inclus dans le budget annuel du Ministère de la Santé :</p> <p>Le Ministre de la Santé (ou son représentant autorisé) Nom : Mamy Latiana ANDRIAMANANTSOA</p> <p>Le Ministre des Finances (ou son représentant autorisé) Nom : François Marie Maurice Carvais ERIKO TOAROMANANA</p> <p>Signature:  Signature: </p> <p>Date :  Date : </p>	

2. STRATEGIES AND PERTINENT NATIONAL PLANS FOR THE SUPPORT REQUESTED AND FOR THE CHAIN

How do the national strategies, plans and documents relate to the country's supply chain strengthening programs and what supporting evidence do they provide for the application for support from the CCE optimisation platform? These documents **must be attached** to your request; they must be **dated** and their text must be **final**.

No.	Strategy/Plan/Document <i>*All the documents are mandatory. Only complete applications will be considered.</i>	Attached Yes/No	Final version (dated)	Term	<u>Comments</u>
1	Signature sheet for the Minister of Health and the Minister of Finance or their authorised representatives	Yes		N/A	
2	Signature sheet for approval by the HSCC/IRC or equivalent committee and the minutes of the meetings	Yes	August 2016	N/A	
3	National Health Sector Development Plan	Yes	April 2015	2015 - 2019	
4	cMYP	Yes	2016	2016 - 2019	
5	EVM Assessment	Yes	2014	2017	Next assessment scheduled in 2017.
6	EVM Improvement Plan	Yes	2016	2017	
7	Annual EVM working plan and interim report on the EVM Improvement Plan¹	Yes	2016		
8	8.1 - Report on the CCE² ET inventory	Yes	August 2016	2016	
	8.2 - Site segmentation plan	Yes	August 2016	2017 – 2018	
9	9.1. Cold chain repair and expansion plan	Yes	August 2016	2017 – 2018	
	9.2 - Plan for the selection and strategic deployment of the equipment	Yes	August 2016		
10	Maintenance plan with financing	Yes	August 2016	2017 - 2021	
11	Proof of status concerning the exemption of the CCE from customs duties	Yes	2013	N/A	
12	OTHER PERTINENT DOCUMENTS			N/A	
	12.1 - Report on inequities and geographic targeting of inequities	Yes	2014		
	12.2 - Decree of the Minister of the Environment, Water and Forests	Yes	2007		

13. How do the above mentioned plans, strategies and documents back up the application for support for the CCE optimisation platform (“initial support” and “progressive support”)? We recommend that countries consult the pertinent sections of the above referenced documents wherever possible.

Logistics is one of the basic components of the Expanded Program on Immunization. The cold chain must be reliable to ensure quality immunisation and to cover all the children regardless of their geographic location and socio-economic situation. The cold chain equipment is one of the essential basic components of the supply chain, which guarantees the vital importance of the vaccines to reach all children.

The support requested from the platform will contribute to expanding the cold chain to the 54 priority Health Formations as well as into those that have no equipment, replacing obsolete equipment (45% of which is more than 10 years old), broken-down equipment (34%), kerosene-powered (64%) and electric-powered (18%) equipment. The acquisition of new CCE (Cold Chain Equipment) guarantees the reliability of the equipment to reach the majority of the population for effective immunisation. This will make it possible to increase vaccination coverage and contribute to equity.

The overall immunisation plan requires that the benefits of immunisation be extended equitably to all children. In other words, each beneficiary must be immunised regardless of geographic location, age, gender, handicaps, level of education,

¹ The interim report on the annual working plan and the EVM implementation plan must be updated not later than within three (3) months following the application for support from the platform.

² The CCE inventory must have been updated not later than one (1) year after the application for support from the platform.

socio-economic level or ethnic group, and under-served populations must be reached. In 2014, Madagascar are conducted an assessment of inequity on the basis of different criteria (immunisation coverage, disparities between the richest and poorest, economic and social level, educational level, geographic and cultural obstacles, access to information).

On the basis of this assessment, the districts have been categorized and ranked by degree of inequity, which has made it possible to prioritize the districts for health services (HSS, EPI). See the document entitled "Madagascar - Immunization and Equity" (Annexe # 12.1 Madagascar immunisation and equity 30Sep2014.pdf)

The application for support is therefore based on the analysis of the situation and the objectives of the 2016 - 2019 cMYP that define the priorities for the period. The drafting of the cMYP itself took into consideration the different assessments such as the EVM to define needs on the basis of recommendations, the equity survey (attached) which made it possible to identify the principal bottlenecks, and the orientations provided in the ministerial decree concerning absorption refrigerators. Among the principal priorities, solar power occupies an important place not only to strengthen storage capacities and to power the cold chain equipment to reduce problems of equity, as well as to improve immunisation coverage.

The optimization of the cold chain equipment will therefore contribute:

- To extending the availability of cold chain equipment to the peripheral and intermediate levels to improve immunisation coverage in conformance with the cMYP;
- To reaching 60% solar power in 2018;
- To the implementation of the recommendations of the EVM 2014 assessment, among others criteria 2, 3, 4 and 5 which are directly related to cold chain equipment, and 13.2.1.1 with regard to the proper storage temperature of the vaccines, storage capacity and transport (#5);
- To the implementation of the "general" recommendations of the EVM to the Ministry to prepare a solar powered strategy;
- To purchasing the most efficient cold chain equipment in terms of temperature stability via the "initial support" which will contribute to improved quality assurance for the vaccines;
- To improving the situation of inequity and immunisation coverage by prioritizing the Basic Health Centres and the chief towns of the district that are located in areas of low equity on the basis of an equity study attached as "Annex 12.1".

Following the updating of the inventory of the cold chain equipment, 279 Basic Health Centres are not equipped with cold chain equipment. It should also be noted that 8% out of a total of 34% of the cold chain equipment is inoperable or unrepairable. This situation in part explains the country's poor performance, in that the immunisation coverage rates for Penta 3 had deteriorated significantly, from 90% to 86% between 2008 and 2015, with major disparities from one region to another and from one district to another on account of differences in accessibility, the availability of human resources, the outreach strategy and funding for vaccines.

Madagascar has conducted a study on the factors that have an impact on equity. This study has indicated that problems with the cold chain (lack of refrigerator or refrigerator shut down, insufficient fuel, outages in the supply of vaccines) and accessibility problems (outreach strategy not implemented or of low-quality) are essential factors that influence coverage and equity. These factors have been taken into consideration in the prioritization of the health structures to be provided with solar-powerful change equipment.

Kathy platform calls for strengthening the operation of the cold chain and improving Effective Vaccine Management (EVM) to contribute to strengthening of coverage and equity in terms of immunisation. The optimization of the cold chain will increase the CVM coverage from 92% to 100% and will improve accessibility to be able to immunise populations who are difficult to reach which will in turn improve coverage.

For the "initial support" phase, 972 kerosene-powered refrigerators are to be replaced in 912 Basic Health Centres. The purchase of the solar-powered colds chain equipment will be spread over 2017 and 2018. On the other hand, the purchase of the 147 electric cold chain units (freezers) is intended for the district and will be planned for the 2017 - 2018 phase. At present, of the 64% of the country's kerosene-powered coal-chain equipment, 45% of the equipment is more than 10 years old and 21% is more than 15 years old. However, the availability and quality of the kerosene as well as the spare parts and maintenance remain problematic for the operation of the absorption cold chain, which has an effect on immunisation coverage and equity.

The replaced equipment must be destroyed according to the instructions and procedures issued by the Ministry of the Environment.

The platform is therefore an opportunity for the country to strengthen and optimize the cold chain equipment. It consists of stimulating the contribution from the State and all its partners to purchases of refrigerators/freezers, in particular those that operate on solar power. It also makes it possible to standardize and harmonize the brands of equipment to facilitate maintenance and the supply of replacement parts.

The total budget for cold chain equipment for 2017 - 2018 is USD 12,853,211. Together, the contribution by the State and its partners is on the order of USD 2,570,642. Currently, the funds available from the State and from GAVI HSS2 are USD 3,125,000.

The service and maintenance plan are available to ensure the viability of the cold chain equipment.

3. INFORMATION ABOUT THE APPLICATION



Please read [Section 6](#) relative to the [instructions for the application](#) for support of the platform for complete information on progressive support and the application conditions

3.1 Summary of the application conditions

To be eligible for HSS support from Gavi, the EVM optimization platform must provide progressive support (for a maximum period of 5 years) as follows: “Initial support” (approximately the first and second years) to respond to the country’s most urgent EVM requirements and “Follow-up support” (approximately the 3rd to 5th years) to respond to additional EVM needs for the transformation of the supply chain to provide sustainable support for the coverage and equity objectives.

- **The country must submit a single application to the Cold Chain optimization platform for the two “initial” and “follow-up” phases.**
- It is fundamental to have adequate cold chain equipment in good operating condition to ensure the effectiveness of the vaccine supply chain; this requirement is in addition to the other “fundamental” requirements, namely supply chain managers, the data necessary for the management of the supply chain, effective and optimized design of the supply system and a continuous improvement process. **It must be demonstrated that the support from the cold chain optimization platform will supplement investments from other sources in meeting these fundamental requirements.**
- **Countries must also demonstrate in their applications that the support from the platform will contribute to the sustainable improvement of coverage and equity of immunisation, in accordance with national targets.**

4. APPLICATION

This section provides an overview of the types of information that the IRC expects to receive from countries in their applications for support from the cold chain optimization platform.

4.1. Analysis of the situation and support requested

This section must be completed with the appropriate references to the country’s documents listed in section 2. Countries must provide descriptive information in response to the following questions.

Section	<i>Required information</i>
Analysis of the country’s supply-chain situation and of the cold chain equipment (Numbers, distribution, functions etc.) <u>3 pages</u>	<p>1. How is the country’s vaccine supply chain administered?</p> <p>In accordance with national policy, the Department of Health, via the EPI department, prepares an estimate of requirements in collaboration with its partners to determine the annual purchase orders.</p> <p>B national supply plan begins at the national level to the regions and/to the districts, according to guidelines. However, shipments into certain districts can only be done by air, considering their isolation and the need to shorten delivery times to maintain the quality of the vaccines.</p> <p><u>National procurement and storage</u></p>

- Preparation of a forecast to plan and estimate vaccine requirements, consumables and cold chain equipment on the basis of the objectives for the coming year and inventories at the end of the current year
- Delivery to the country by sea from the UNICEF central purchasing office in Copenhagen for the cold chain equipment and injection materials, and by air for the vaccines;
- Delivery of supplies to the central warehouse according to the delivery schedule, taking inventory levels into consideration;
- Storage on the central level in 1 (one) negative chamber and 5 (five) positive chambers, depending on the type of antigen.
- Storage also on the national level in 11 refrigerators;
- Monthly monitoring of inventories on the national level with the SMT to schedule procurements and avoid outages and/or oversupplies.

Supplies for regions/districts

- Delivery of supplies from the national level to the regional level for the districts of the chief towns in the regions, or directly to districts that are difficult to access. On the basis of the requirements expressed by the districts, procurements will be done every 3 months to ensure the permanent availability of vaccines. Certain districts are supplied directly from the national level to get around the lack of transport means from the regions to the districts;
- Delivery of vaccines either with refrigerated trucks (2) or DEPI trucks (3), or the rental of planes or trucks;
- Storage in the regional cold rooms or refrigerators in the districts with monthly monitoring of inventories by the District Immunisation Data Management Tools.

Supplies for Basic Health Centres

- Monthly procurements for the Basic Health Centres either by the districts or by the Basic Health Centres themselves or on the basis of an agreement between districts and Basic Health Centres;
- Storage in the refrigerators and in the vaccine carriers for the fixed, outreach and mobile immunisation activities;
- It should be noted that some Basic Health Centres where access is difficult are supplied for a period ranging from 1 to 5 months during the rainy season.

Quality assurance:

- Monitoring of storage temperatures twice a day on all levels (morning and late afternoon);
- Monitoring of temperatures with Thermal graph on the national level and regional level, then with the Fridge Tag at the district and Basic Health Centre level;
- Monitoring the quality of vaccines on all levels with the VVM for the antigens that have one;
- Use of 02 refrigerated trucks for transport;
- In the near future, installation on the national level of Multi log with auto-dialer.

2. What weak points have been identified in the country's supply chain?

In Madagascar, the principal weak points of the supply chain that have an impact on immunisation coverage and equity according to the EVM and the Inequity Study conducted in 2014 are essentially problems of availability and quality of the vaccines.

2.1 - Concerning the availability of vaccines:

- Basic Health Centres not equipped with cold chain equipment (279 out of 2637 = 10.58%), see Annex 9.1;
- Basic Health Centres with cold chain equipment that cannot be repaired (204 out of 2637 = 7.7%), see Annex 9.1;
- Cold chain equipment non-functioning due to shortages of kerosene and/or replacement parts on account of the current difficulty in purchasing replacement parts for absorption refrigerators;
- Irregular supply of vaccines to all levels on account of problems releasing funds on the national level;
- The inaccessibility of certain health centres poses supply problems;
- During the rainy season (5 months from December to May), 609 Basic Health Centres out of 2637 (23.47%) in 30 districts are difficult to access;

- Insufficient storage capacity on the level of certain Districts and Basic Health Centres;
- 2.2 - On the subject of the Quality of the vaccines
- Lack of adequate transport means for the supply of remote Basic Health Centres;
 - Temperature fluctuation of the kerosene-powered cold chain equipment due to the variation in the qualities of kerosene available in the peripheral areas of the country;
 - The cold chain equipment in the Basic Health Centres is 52.8% obsolete, compared to 45% on the national level;
 - Frequent power outages by JIRAMA (water and electric power company) as well as the lack of a functional emergency generator;

3. What measures will make it possible to resolve these weak points?

- Equipping the Districts and the Basic Health Centres with solar-powered refrigerators, in addition to those recently donated by the State, Gavi, UNICEF, the WHO and the World Bank (705 solar-powered cold chain units from 2010 to 2016);
- Temporary establishment of a system of central supply sites on the level of the Basic Health Centres. A Basic Health Centre serving as a central supply-side makes it possible to securely store vaccines for peripheral Basic Health Centres (one central storage site to cover an additional 3 nearby Basic Health Centres);
- Donations of replacement parts and kerosene to the district and the Basic Health Centres by Gavi, UNICEF and WHO (pending the replacement of all the kerosene-powered refrigerators between 2017 and 2021)
- Improved concentration between the ministry and the Financial and Technical Partners concerning the availability of funds for the delivery of vaccines and supplies;
- Utilization of Fridge Tags for continuous monitoring of refrigerator temperature

The Government, with the support of the partners, has started to implement these corrective measures as noted above. The support of the cold chain optimization platform will contribute to the more rapid removal of bottlenecks and the improvement of coverage and equity

4. Describe the obstacles to the implementation of these measures.

- Lack of funds in time for the installation of certain cold chain equipment (already delivered but pending installation);
- Delays in releasing funds and insufficient funds for the purchase of kerosene;
- The improper use of Fridge Tags to monitor temperatures by certain personnel of the Basic Health Centres in spite of briefings and posters.

5. Describe the lessons learned from the recent support linked to the supply chain that are contributing to the current request for support for the cold chain optimization platform.

- **Recent support to the supply chain:**
 - ✓ Acquisition of negative and positive cold rooms;
 - ✓ Acquisition of refrigerated truck (2) with support from Gavi;
 - ✓ Acquisition of solar-powered cold chain equipment (Gavi, World Bank, Government, WHO and UNICEF)
 - ✓ Acquisition of temperature monitors for the cold rooms on the national level (Multilog etc.)
 - ✓ Acquisition of vaccine carriers for transporting vaccines in the framework of the initiative to eradicate polio;
 - ✓ Computer equipment on the national level to track and manage inventories
 - ✓ Acquisition of replacement parts for absorption refrigerators by the partners.
- **Lessons learned:**
 - ✓ Strengthening the storage and management capacities for inputs, to make it possible to stop renting a privately-owned cold room;
 - ✓ Computerized management of inputs (DVDMT on the district level, SMT on the national level) and cold chain inventories with improved inventory tracking on the national level;
 - ✓ Improvement in the quality of transport of inputs with refrigerated trucks, monitoring of temperatures;

- ✓ Improved availability of vaccines with solar-powered equipment. The shortage of kerosene is one of the major causes for failure to use refrigerators;
- ✓ Temporary use of certain Basic Health Centres as central supply centres (106 centres in 34 health districts)
- ✓ Standardization of the cold chain equipment used to facilitate training, installation and maintenance as well as replacement parts

6. What percentage of installations have unreliable access to electricity from the grid for a period of time up to 8 hours a day or longer?

- National level: 100%
- Regional Level: 81%, due to the lack of generators and frequent power outages
- Intermediate level: 25.63% due to frequent power outages

This poor access to electric power at the intermediate level and outages of kerosene at the peripheral level had led the country to prioritize support from the cold chain optimization platform for the first two years.

7. Please indicate the quantity and percentage of the current cold chain equipment that: a) works; b) is PQS certified (Performance, Quality, Safety); c) is not PQS certified; and/or d) is obsolete.

- a. Operational: 63% of the equipment
- b. PQS certified 33% of the equipment (PQS version August 2016)
- c. Not PQS certified: 66.95% of the equipment
- d. Obsolete: 45% of the equipment (in 2019, the figure will be 66%)

8. What percentage of the birth cohort receives basic services from cold chain equipment that is operational and currently listed as PQS?

CATEGORIES	% of birth cohort
Cold chain equipment operational on the peripheral level	~ 60%*
Cold chain equipment meeting PQS standards on the peripheral level	22%

* Frequent shortages of replacement parts, lack of kerosene and major fluctuations in the quality of the kerosene **do not guarantee the permanent operation** of the absorption equipment. Therefore, the 80% of the equipment that could potentially be operational is limited and can vary between 40% and 80%. Their permanent operational status depends on the availability of kerosene, the quality of kerosene as well as the availability of wicks, glasses and burners.

9. What cold chain bottlenecks in the current organization of the supply chain can be eliminated (e.g., limitations in terms of capacity or technology)?

The bottlenecks that can be eliminated relates to problems with storage capacity, maintenance and management of vaccine quality, and in particular:

- Effective coverage of the entire country with cold chain equipment with an increase in the number of Basic Health Centres that have the equipment;
- The problem of storage capacity (availability of vaccines): support from the platform will make it possible to increase the cold chain equipment, which will result in an increase in storage capacity. This new distribution in terms of cold chain coverage will promote the availability of vaccines, including in remote zones (equity), specifically in the Basic Health Centres that currently have no cold chain equipment or cold chain equipment that no longer works. Therefore, it immunisation can be administered regularly with improved accessibility for the population, hence greater immunisation coverage;
- The problem of replacement parts and energy source (kerosene and electric power) will be solved with the gradual replacement of these sources by solar energy;
- The problem of cold chain maintenance with regard to the absorption equipment (reduction of operating and maintenance costs);
- The problem of human resources: The replacement of the current cold chain equipment will make it possible to reduce the workload of the manager of the health facility, as well as that of the maintenance technicians.

10. Describe the other problems related to the supply chain that assistance from the cold chain optimization platform will make it possible to reduce

- The obsolescence of the cold chain equipment: 45% of the current equipment is currently obsolete (more than 10 years old);
- The diversity of brands and models of the existing cold chain equipment: It is very difficult to technically manage equipment from numerous manufacturers in terms of training, maintenance and repair;
- The Basic Health Centres not equipped with cold chain equipment: Poor performance of immunisation coverage in Districts where the Basic Health Centres do not have cold chain equipment;
- The problem of inequity: the increase in cold chain coverage will improve access to immunisation services for the population in remote and/or remote areas;
- The problem of operation of the kerosene-powered cold chain equipment: kerosene-powered cold chain equipment represents 60.9% (1,872 out of 3,075) of the country's equipment with many problems in finding replacement parts and kerosene, which poses a risk for routine immunisation. Therefore, the Gavi platform will allow us to reduce this problem of operation with the replacement of these refrigerators.

11. What are the general cold chain equipment requirements?

11.1 Equipment

In order of priority, our requirements are listed below:

- 1-Solar-powered refrigerators/freezers: Basic Health Centres
- 2-Fridge Tags Regions, districts and Basic Health Centres
- 3-Electric and solar-powered refrigerators: districts
- 4-Electric or solar-powered freezers: regions and districts
- 5-Voltage regulators/stabilizers: regions and districts
- 6-Vaccine carriers. Basic Health Centres
- 7-Storage Batteries: for the regions, districts, Basic Health Centres
- 8-Ice chests: regions and districts
- 9-Positive cold rooms: regions

11.2. Training:

Training of new users in the operation of equipment in terms of handling, maintenance and preventive maintenance on the peripheral level.

12. Which of the requirements for cold chain equipment identified during the situation analysis are urgent and why, and must be resolved during the urgent phase? (E.g. The type of equipment, model, capacity, number etc.)?

- Solar-powered refrigerators with a freezer compartment for the Basic Health Centres. It is urgent to equip the Basic Health Centres first that have no equipment or that have unrepairable cold chain equipment. That will make it possible to improve equity and to improve the rate of immunisation coverage.
- Electric and/or solar-powered refrigerators and freezers for the districts: the strengthening of the districts with cold chain equipment will make possible an increase in storage capacity, the production of cold packs and improves management of supplies to prevent outages and over stocking of vaccines.
(See **Annex No. 9.1** - "Implementation and expansion plan").

13. What percentage of the birth cohort will receive services with cold chain equipment and operating condition during the deployment of the platform equipment?

CATEGORIES	Population	% of birth cohort
For URGENT #1	2,062,647	8.4%

The country's urgent and increased requirements for cold chain equipment
(Number, distribution, functions etc.)
1 page

(Installing ECF in 279 Basic Health Centres that currently have none)		
For URGENT #2 (Replacement of unrepairable cold chain equipment in 204 Basic Health Centres, 5 Basic Health Districts and 2 DRSP)	2,567,060	10.4%
For URGENT #3 (Replacement of cold chain equipment in the 708 Basic Health Centres in the priority districts)	6,778,962	27.7%
For URGENT #4 Freezer equipment in the Basic Health Districts	NA (population covered in the Basic Health Centres)	
Enhanced support phase and population covered by solar-powered cold-chain equipment	13,062,856	53.4%
Total Population - Country (2016)	24,471,525	

P.S.1: Urgent #4 is not mentioned because the targets have already been taken into consideration in #1, 2 and 3.

P.S. 2: the largest birth cohort (27.7%) has not been selected as the first priority for the deployment of the cold chain equipment because:

1) the first priority is to equip the Basic Health Centres that do not have any cold chain equipment or have non-functioning cold chain equipment

2) The assistance for the year 2017 should begin in August 2017 and the time allowed for the installations is not sufficient to take into consideration all the priorities that already have cold chain equipment that is not listed in the PQS dated August 2016.

Note: 100 recently purchased solar-powered refrigerators have been installed and validated in five weeks in July-August 2016 with support from the DEPI, WHO and UNICEF.

The Ministry has 35 teams for the installation and maintenance of the cold chain equipment.

14. Explain the relationship between these urgent requirements and the current bottlenecks (as indicated in the preceding section)

The installation of the urgently needed equipment will enable us to eliminate all the bottlenecks cited above:

- The effective coverage of the country with cold chain equipment: obtaining the equipment we would like to receive will make it possible to increase the functionality of our cold chain equipment from 67% to almost 100% in the next two years on the national level; In addition, it will increase coverage with cold chain equipment at the level of the Basic Health Centres from 92% to 100%.
- The problem of storage capacity (availability of vaccines): the increase in storage capacity will make possible improved availability of vaccines at the intermediate and peripheral levels, in particular at the level of the Basic Health Centres.
This new storage capacity will be better suited to the immunisation schedule and the rate of growth (2.7%) for at least 10 years.
- The problem of replacement parts and energy sources (kerosene and electric power): The installation of the solar-powered cold chain equipment will make it possible to reduce by up to 90% the cost of replacement parts and kerosene compared to the absorption cold chain equipment (see table below) and to reduce the cost for electric cold chain equipment by 80% for the period from 2016 to 2021.
It will also make it possible to remedy problems of power outages and voltage variations in the current supplied by the national electric power utility (JIRAMA), given that the new electrical equipment will be delivered with stabilizers.
- The maintenance problem with reference to the absorption cold chain equipment will be solved by the acquisition of solar powered cold chain equipment which will allow us to reduce the operating and maintenance costs as well as the labour costs for the personnel required.

- The problem of vaccine quality: the acquisition of new “plus performance electric cold chain equipment will provide longer standalone storage times in the event of power outages.

Summary of maintenance and repair costs of the Madagascar cold chain equipment

	Period covered by this application		Increased support (to be submitted at a later date)				Cost 2016 – 2022
	2017	2018	2019	2020	2021	2022	
Operating and maintenance costs for the non--SDD equipment							
Kerosene costs	499,955	443,077	355,201	182,672	128,780	0	1,609,685
Replacement part for the kerosene-powered units	100,000	88,623	71,046	36,554	25,758	0	321,981
Replacement parts for the 154 solar battery refrigerators	50,000	52,500	55,125	57,881	60,775	63,814	340,096
Replacement parts for all the units operating on electric power	47,325	47,325	47,325	465	9465	9465	170,370
Preventive maintenance for all the cold rooms	17,875	18,769	19,707	20,693	21,727	22,814	121,584
Total Cost with the Platform	715,155	646,900	541,447	296,566	231,878	77,340	2,563,716
Total Costs without the Platform	715,155	750,913	788,458	827,881	869,275	912,739	4,864,422
Annual market rate of inflation	5%						
Savings with the Platform	0	104,013	247,011	531,315	637,397	835,399	2,300,706

P.S.: from 2017 to 2018, the savings will be approximately USD 104,013

But for the period from 2017 to 2022, the savings will be approximately USD 2,300,706

Projected immunisation coverage, equity and sustainability

2 pages

15. How will the support requested from the platform contribute in real terms to the eradication of socio-economic and geographic inequalities and obstacles to parity identified in coverage and the equity of immunisation? The examples can include (non-exhaustive list):

During the study of equity in Madagascar, the principal bottlenecks identified in relation to the supply of services are the shortage of qualified immunisation personnel, geographic inaccessibility, outages in the supply of vaccines and the *absence or non-functionality of the cold chain* for the storage of vaccines at the level of the Basic Health Centres, as well as the shortage of replacement parts or the scarcity of kerosene.

a. Isolated districts or districts where coverage is low

- Strengthen the storage capacities for solar-powered equipment, which will improve the availability of vaccines in isolated districts subject to shortages of kerosene or power outages;
- Ensure the availability of vaccines in the 30 inaccessible districts during the rainy season;
- Make possible routine immunisations in the centres that must arrange immunisation sessions based around the operation of their refrigerators and improve performance. According to the coverage survey conducted after the measles campaign in 2013 (Table No. 14), 94% of children have been vaccinated under the fixed strategy. Ensuring routine immunisations with the fixed strategy is already significantly improving coverage.
- Reduce the number of missed opportunities for children and mothers who arrive at sites for routine immunisation.
- Make possible the regular implementation of outreach strategies for populations living more than 5 km away, providing the necessary means of transport.

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

- The regular conduct of outreach strategies will make it possible to resolve issues of equity with reference to poverty which, in Madagascar, is closely linked to the problem of lack of transport to reach the immunisation sites;
- The improvement of vaccine availability in all the Basic Health Centres, specifically those in areas that are difficult to reach and poor, will make possible routine immunisation and more frequent organization of outreach strategies.
- Strengthening cold chain equipment, which is a key component of the Reach Every Child (RAC) approach is essential to reduce these inequalities.

c. Communities where obstacles to equity or more pronounced and/or few women receive an education (frequently associated with lower coverage rates)

- In Madagascar, the removal of obstacles linked to parity and education is more a function of actions relating to demand than to the supply of services. In fact, failure to take advantage of services as a result of ignorance of the benefits or refusal to be immunised are not always related to availability;
- Nevertheless, ensuring the availability of vaccines and their quality will enable the health agents and community liaisons to increase sensitivity and provide information to mothers to increase the utilization of immunisation services.

16. What analyses³ have been conducted, or what plans or being made to optimize the design of the supply chain distribution system⁴ to improve the efficiency of the supply chain and contribute to the accomplishment of objectives in the areas of coverage and equity?

Madagascar has conducted a study on the factors that have an impact on equity (Annex 12.1). This study has indicated that problems with the cold chain (lack of refrigerator or refrigerator turned off, insufficient fuel, disruptions in the supply of vaccines) and accessibility problems (outreach strategy not implemented or of low-quality) are essential factors that influence coverage and equity;

- A review of all the districts taking into consideration different indicators such as immunisation coverage, the number of children not immunised, support to the district by a partner or the lack of such support, the accessibility of the target population for the service (DTP1 Coverage) etc. has identified 54 districts at risk and that must be priorities if the country wants to have an impact on immunisation coverage and equity;
- The third independent assessment of the response to the polio outbreak (“Outbreak Assessment 3”), which incorporated more monitoring and social mobilization issues, has identified 39 districts at risk for the persistent circulation of the polio virus on account of the low immunisation coverage and/or monitoring;
- All these analyses have made it possible to reorganize the supply chain by ensuring:
 - ✓ The direct supply from the National level to the district, which reduces the time in the passive cold room to maintain the quality of the vaccines/inputs (EVM) to achieve effective coverage.
 - ✓ By establishing absorption cold chain equipment distribution centres (temporary solution) to increase coverage of the target populations from the Basic Health Centres equipped with solar-powered refrigerators pending the installation of refrigerators in all the Basic Health Centres.
 - ✓ Strengthening maintenance of the kerosene-powered units with the supply of replacement parts

17. What impact do these considerations in the design of the system have on the selection of the cold chain equipment that the platform will support?

The direct supply from the national level to the district level and the establishment of distribution centres requires solar-powered cold chain equipment with a greater capacity.

³ These plans can be presented in the form of an office review or complex models of distribution and the supply chain system in the country that can be used to identify ways to increase the efficiency of the chain to deliver powerful vaccines.

⁴ NOTE: the activities defined to optimize the structure of the supply chain distribution systems ARE NOT being financed by support from the platform.

	<p>This greater capacity is necessary to receive and store the vaccines necessary to cover the target population. This concept also makes it possible for Basic Health Centres in areas that are difficult to access to maintain its supply of vaccines during the rainy season.</p> <p>These conditions steer us toward the following choices:</p> <ul style="list-style-type: none"> - District level: Ice-lined freezers with voltage stabilizers. - Basic Health Centre level (distribution centre): TCW 40 SSD and TCW 2043 SSD, depending on the size of the population and the additional storage capacity required for districts that are difficult to reach during the rainy season <p>18. In concrete terms, how will support from the platform make it possible to improve the sustainability of the supply chain system?</p> <p>The support from the platform will have an impact on the supply chain and be sustainable by supporting the resolution of problems relating to:</p> <ul style="list-style-type: none"> ▪ Operation of absorption equipment which will be gradually replaced by solar power units; ▪ Preventive and curative maintenance of the equipment by standardizing the equipment and by training (or retraining) technicians; ▪ Replacement parts included during the purchase of the new cold chain equipment; ▪ Improving coverage with operational cold chain equipment will also improve the availability of quality vaccines; ▪ Restoration of the cold chain equipment and creation of an expansion plan will make it possible to have at least 10 years of storage capacity for vaccines on the district level and in the priority Basic Health Centres.
<p>Maintenance plan (and financing source) and retirement of equipment</p> <p><u>2 pages</u></p>	<p>19. How will the country ensure that certain aspects of cold chain maintenance are guaranteed (e.g. preventative and corrective maintenance, operational monitoring, technicians, financing the maintenance etc.)?</p> <p>The country has already provided for:</p> <ul style="list-style-type: none"> ▪ The training and equipping of 135 maintenance technicians in all 22 regions and 113 districts; ▪ The training of 1191 Basic Health Centre directors in initial platform support during the installation of the solar-powered cold chain in preventive maintenance; ▪ The use of temperature measurement logs for each unit and the presence of a Fridge Tag makes it possible to monitor the proper operation of the unit; ▪ The entry of a category for the purchase of replacement parts in the State budget and the support of the partners for their acquisition. <p><i>a. At what frequency has the country committed to perform preventative and corrective maintenance (with the support of the partners)?</i></p> <p>According to the maintenance plan for each category of cold chain equipment (see Annex No. 10 - "Maintenance plan with financing")</p> <p>Preventative maintenance: Weekly, monthly, quarterly, every six months and annual curative maintenance: as needed (case-by-case diagnosis).</p> <p><i>b. What technical support is provided for maintenance?</i></p> <ul style="list-style-type: none"> ▪ Presence of a representative of the supplier for service after sale and the warranty on the equipment at the time of purchase; ▪ The refresher training of technicians in 2017-2018 (22 technicians in the regions, 113 in the districts) From HSS2 and B Medical System financing. <p>20. How will the country monitor the performance of preventative and corrective maintenance?</p> <p>To ensure the monitoring of maintenance operations, in addition to the field assignments for supportive supervision, the program will provide for:</p> <ul style="list-style-type: none"> ▪ The availability of a preventative and corrective maintenance card in each region, district and Basic Health Centre (Annex 10); ▪ The availability of a card to be completed at the level of the districts in the regions for transmission to the national level monthly (to be implemented);

- The availability of a log at the level of the districts and the Basic Health Centres where the responsible person must indicate the recommendations of supervisors for corrective actions for the performance of preventative and corrective maintenance.

a. *What source(s) of financing will be used for the maintenance? To what extent are they guaranteed?*

Three sources of financing: Financing from the State, Gavi and Partners
These are 100% guaranteed

Level	STATE	WHO	UNICEF	Gavi HSS2
Purchase of kerosene	66.7% (8 months)	-	-	33.3% (4 months)
Replacement parts for the kerosene-powered cold chain equipment		50%	50%	
Maintenance (battery solar, electric cold chain equipment and cold rooms)	25%	25%	25%	25%

21. **How does the country plan to dispose of the obsolete and unrepairable equipment replaced by the equipment from the cold chain optimization platform?**

Article 8 of the decree of the Ministry of the Environment says that “The CFCs they contain will be disposed of at a later date and in conformance with internationally recognized environmental technologies.” (Annex 12.2).

In practice, the following method will be applied: (In preparation)

- Step 1: Creation on the national level of a committee called the COMBINED OPERATIONAL COMMITTEE (CMO) on the national level, which will be in charge of implementing and monitoring all the disposal procedures. The committee will be composed of technicians representing the Ministry of Public Health, the Ministry of the Environment and the Technical and financial Partners. The task of the committee will be to define the modalities to be followed for the creation of these procedures and their implementation.
- Step 2: Collection of all the refrigerators in question in the storage warehouse in each District (Health District Office). The operation will therefore be carried out at the level of each District.
- Step 3: Recovery of the ammonia gas with a liquid refrigerant recovery machine and storage in appropriate bottles.
- Step 4: Shipment of all the bottles to the warehouse of the Ministry of the Environment where they will be stored.
- Step 5: Dismantling of the shells of the refrigerators to recycle the plastic with plastics companies for the plastic parts of the shells and to sell the scrap metal to scrap dealers or metallurgical plants, if such facilities exist in each district.

22. **How will the country facilitate the role of the manufacturer or representative at the time of purchase, distribution and installation of the equipment?**

The country, which has already acquired experience in the distribution and installation (more than 600 cold chain units between 2014 and 2016) will facilitate the manufacturer’s activities. In addition:

- The standardization of the cold chain equipment will facilitate the selection at the time of purchase;
- The allocation plan will facilitate distribution and make it possible to identify the installation sites;
- The technicians from the Ministry of Health have already been trained in the installation activities and have been certified by the Ministry of the Environment.

23. **What is the origin of the joint investment? Is the country’s joint investment secured?**

The joint financing of the investment provided by Madagascar in the amount of USD 2,570,642 will come from the State in the framework of HSS2. This financing will guarantee 100% of the initial support for the period 2017-2018.

24. **Has the country obtained a customs exemption for the cold chain equipment? If so, please attach justifying documentation.**

Yes, the country has obtained a customs exemption for the cold chain equipment (Annex No.

Other information on implementation

1 page

4.2 Initial support phase

The purpose of this initial support is to respond to the urgent cold chain requirements for the first two years.

Please indicate in a maximum of three pages:

- **2 to 4 urgent and priority CCE requirements** identified in the plan for the repair and expansion of the CCE and in the plan for the selection and strategic deployment of the equipment (see Annex 3 of the Application Instructions),
- **Description** of the activities planned and in progress relative to the other “fundamentals” of the supply chain

4.2.1 Urgent and priority CCE requirements

i

The budgets do not include the operating costs

(The operating costs will be financed by the Ministry of Health or by other partners)

Priority (URGENT) CCE requirement No. 1
(Required information)

1. The need

Please include: type of activity (e.g. Replacement of obsolete CCE, addition of CCE to facilities that have none etc.); site (facility) specific CCE; type of equipment required, equipment warranty.

For this application for support for urgent priority called chain equipment, Madagascar has identified as a priority need (URGENT) Number One, the equipping of the Basic Health Centres that currently do not have cold chain equipment to ensure improved coverage, to reduce the number of distribution centres

Location	Site type (Distribution, Basic Health Centre)	Type of activity	Specific CCE	Type Equipment	Quantity
Basic Health Centres	Peripheral	Routine and SIA	TCW 40 SDD	Refrigerator with freezer compartment	229
Basic Health Centres	Peripheral	Routine and SIA	TCW 2043 SDD	Refrigerator with freezer compartment	59
Basic Health Centres	Peripheral	Routine and SIA	Fridge tags	Temperature recorder	3.840

(96 Basic Health Centres in areas that are inaccessible during the rainy season, six of which need at least two units)

The equipment has been selected as a function of the size of the population served by each health facility and their storage capacities.

They also been selected on the basis of the accessibility of the health facilities.

The country has already had good operational experience with more than 700 solar-powered refrigerators manufactured by DOMETIC. That represents 23% of the CCE equipment on the peripheral BHC level.

The 10-year warranty for this brand of equipment is a major advantage.

The construction of the unit is more suitable for our climate.

2. Explanation

Please include: reasons for the urgent need (e.g. CCE coverage zone and/or low immunisation rate (Penta3), obstacles to parity, nomadic population etc.); current CCE coverage and immunisation coverage (Peenta3) in the population area.

- Existence of 279 BHC without CCE constituting the first priority for increasing immunisation coverage and improving equity;
- 96/279 BHC are in zones that are difficult to reach during the rainy season. (Storage capacity to be strengthened for 05 months);
- Poor performance in districts where the BHC are not equipped with CCE.

3. Expected result

Please include: expected increase of the CCE and immunisation coverage (Penta3); anticipated progress in combating identified inequalities (describe, in accordance with the country's performance framework)

- The availability of the CCE will contribute to increasing immunisation coverage in these BHC with the availability of quality vaccines (increase accessibility);
- Increased access to reach targets that have not been vaccinated or not completely vaccinated, specifically in areas that are difficult access, with improved quality and access to immunisation for all children, regardless of their socio-economic conditions and where they live;
- Availability of the CCE in the 279 BHC that will contribute to a 10.5% increase in coverage of the CCE (BHC level) and in the districts;
- Increase in storage capacity (for 05 months) and availability of the vaccines in 96 BHC located in areas that are difficult to reach during the rainy season.

Total CCE budget:

The total budget for Priority No. 1 includes the Gavi share as well as the joint investment from the country: **\$ 2,770,163**

Priority (URGENT) CCE requirement No. 2

The need;

For this application for urgent and priority CCE support, Madagascar has identified as priority (URGENT) need No. 2 the replacement of non-functioning and unrepairable equipment or equipment that can no longer guarantee the quality of the vaccines.

Location	Site type (Distribution, Basic Health Centre)	Type of activity	Specific CCE	Type Equipment	Quantity
Basic Health Centres	Peripheral	Routine and SIA	TCW 40 SDD	Refrigerator with freezer compartment	175
Basic Health Centres	Peripheral	Routine and SIA	TCW 2043 SDD	Refrigerator with freezer compartment	37
BSD:	Intermediate	Routine and SIA	MF314	Electric freezer	42
BSD:	Intermediate	Routine and SIA		Stabilizer 1kva	42

The equipment has been selected as a function of the size of the population served by each health facility and their storage capacities

They also been selected on the basis of the accessibility of the health facilities.

The country has already had good operational experience with more than 700 solar-powered refrigerators manufactured by DOMETIC. That represents 23% of the CCE equipment on the peripheral BHC level.

The 10-year warranty for this brand of equipment is a major advantage.

The construction of the unit is more suitable for our climate.

Rationale:

(See the notes above on Priority Need No. 1)

Non-functioning equipment will be replaced in order of priority in:

- 204 BHC, 43 of which are in zones that are difficult to reach during the rainy season. (Storage capacity to be strengthened for 05 months)
- 05 Districts / BHC
- 02 DRSP

Expected results:

	<ul style="list-style-type: none"> Improved operation of the CCE at the level of the BHC by 8.3%; Increase in storage capacity (for 05 months) and availability of the vaccines in 43 BHC located in areas that are difficult to reach during the rainy season. Increased access to reach targets that have not been vaccinated or not completely vaccinated, specifically in areas that are difficult access, with improved quality and access to immunisation for all children, regardless of their socio-economic conditions and where they live;
--	---

Total CCE budget: *The CCE budget for Priority No. 2 is \$ 2,267,704*

<p>Priority (URGENT) CCE requirement No. 3</p>	<p>a. The need;</p> <p>For this application for urgent and priority ECE support, Madagascar has identified as priority (URGENT) need NO. 3 the strengthening of storage capacities in areas that are difficult to access, have low capacity or that experience major power outages</p> <table border="1"> <thead> <tr> <th>Location</th> <th>Site type (Distribution, Basic Health Centre)</th> <th>Type of activity</th> <th>Specific CCE</th> <th>Type Equipment</th> <th>Quantity</th> </tr> </thead> <tbody> <tr> <td>Basic Health Centres</td> <td>Peripheral</td> <td>Routine and SIA</td> <td>TCW 40 SDD</td> <td>Refrigerator with freezer compartment</td> <td>620</td> </tr> <tr> <td>Basic Health Centres</td> <td>Peripheral</td> <td>Routine and SIA</td> <td>TCW2043SDD</td> <td>Refrigerator with freezer compartment</td> <td>141</td> </tr> </tbody> </table> <p><i>The equipment has been selected as a function of the size of the population served by each health facility and their storage capacities</i></p> <p><i>They also been selected on the basis of the accessibility of the health facilities.</i></p> <p><i>The country has already had good operational experience with more than 700 solar-powered refrigerators manufactured by DOMETIC. The construction of the unit is more suitable for our climate.</i></p> <p>b. Rationale:</p> <p><i>(See the notes above on Priority Need No. 1)</i></p> <ul style="list-style-type: none"> 708 BHC including the 54 priority districts (low immunisation coverage and inequity); 378/708 BHC are in zones that are difficult to reach during the rainy season. (Storage capacity to be strengthened for 05 months) <p>c. The expected results:</p> <ul style="list-style-type: none"> Availability of solar-powered CCE in 26.8% (708/2637) at the level of the BHC; Increase in storage capacity (for 05 months) and availability of the vaccines in 276 BHC (i.e.10.5%) located in areas that are difficult to reach during the rainy season. Increased access to reach targets that have not been vaccinated or not completely vaccinated, specifically in areas that are difficult access, with improved quality and access to immunisation for all children, regardless of their socio-economic conditions and where they live; 	Location	Site type (Distribution, Basic Health Centre)	Type of activity	Specific CCE	Type Equipment	Quantity	Basic Health Centres	Peripheral	Routine and SIA	TCW 40 SDD	Refrigerator with freezer compartment	620	Basic Health Centres	Peripheral	Routine and SIA	TCW2043SDD	Refrigerator with freezer compartment	141
Location	Site type (Distribution, Basic Health Centre)	Type of activity	Specific CCE	Type Equipment	Quantity														
Basic Health Centres	Peripheral	Routine and SIA	TCW 40 SDD	Refrigerator with freezer compartment	620														
Basic Health Centres	Peripheral	Routine and SIA	TCW2043SDD	Refrigerator with freezer compartment	141														

Total CCE budget: *The CCE budget for Priority No. 3 is \$ 7,005,120*

<p>Priority (URGENT) CCE requirement No. 4</p>	<p>a. The need;</p> <p>Priority (URGENT) need No. 4 consists of equipment for freezing in the BHC to increase storage capacities.</p> <table border="1"> <thead> <tr> <th>Location</th> <th>Site type (Distribution, Basic Health Centre)</th> <th>Type of activity</th> <th>Specific CCE</th> <th>Type Equipment</th> <th>Quantity</th> </tr> </thead> <tbody> <tr> <td>BSD:</td> <td>Intermediate</td> <td>Routine and SIA</td> <td>MF314</td> <td>Freezer</td> <td>105</td> </tr> <tr> <td>BSD</td> <td>Intermediate</td> <td>Routine and SIA</td> <td></td> <td>Stabilizer - 1 kva</td> <td>105</td> </tr> </tbody> </table> <p>b. Rationale:</p> <ul style="list-style-type: none"> CCE in 36 chief towns in a district (DHC) to provide emergency capacity under the Standard Operating Procedure (SOP) based on the availability of cold packs; <p>c. The expected results:</p> <ul style="list-style-type: none"> Ensure the freezer capacity for cold packs for routine immunisation and SIA; 	Location	Site type (Distribution, Basic Health Centre)	Type of activity	Specific CCE	Type Equipment	Quantity	BSD:	Intermediate	Routine and SIA	MF314	Freezer	105	BSD	Intermediate	Routine and SIA		Stabilizer - 1 kva	105
Location	Site type (Distribution, Basic Health Centre)	Type of activity	Specific CCE	Type Equipment	Quantity														
BSD:	Intermediate	Routine and SIA	MF314	Freezer	105														
BSD	Intermediate	Routine and SIA		Stabilizer - 1 kva	105														

	<ul style="list-style-type: none"> Increased access to reach targets that have not been vaccinated or not completely vaccinated, specifically in areas that are difficult access, with improved quality and access to immunisation for all children, regardless of their socio-economic conditions and where they live;
Total CCE budget:	<i>The CCE budget for Priority No. 4 is \$ 810.224</i>
GRAND TOTAL CCE BUDGET: “Initial support” (years 1 and 2)	<i>The CCE budget for Priorities No. 1 and 4 is \$ 12,853,211. This amount includes the Gavi share and the joint investment</i>

4.2.2 Activities in progress or planned relative to the other fundamental factors of the supply chain during the initial support phase

In this section, links must be established between the application for support relative to the CCE optimization platform, existing Gavi investments (in particular in the form of health system support) and support for the supply chain provided by other partners.

Describe actions in progress or planned relative to other “fundamental factors” of the supply chain (See section 3 of the Application Instructions) during the initial support phase, including the sources of financing. *The responses in this section must be linked to the EVM improvement plan*

Supply chain managers

Describe all the actions in progress or planned to improve the availability and performance of the supply chain managers, their sources of financing and support from partners.

Taking into consideration the different recommendations of the supervisory inspections and evaluations, specifically those of the EVM, the program has implemented measures on all levels to improve the performance of the cold chain managers. The essential portion of the financing is currently provided by the Ministry of Health and the Technical and financial Partners.

The main tasks are:

- To remind the persons in charge of health services on the national level and on all levels of the importance of effective management of vaccines and consumables;
- To hold a workshop to review and update all the vaccine and consumables management and monitoring tools (inventory management, ordering and delivery, distribution etc.);
- To accelerate the release of funds budgeted by the State for the DEPI for the procedures to receive vaccines and consumables to eliminate undesirable delays;
- To make available to staff on all levels backup plans to be adopted and implemented in the case of outages of the cold chain during storage and distribution;
- Purchase new computers plus the necessary training for the DEPI, the Regions and the Districts;
- Create training plans and curricula in the management of the vaccine supply chains as well as to train the trainers;
- Update and reproduce in sufficient quantities the instructions for the VVM and distribute them on all levels for the training of new staff and the retraining of old staff;
- Provide training/refresher training for staff in charge of logistics and cold chain technicians on all levels in the effective vaccine management principles and tools, as well as in the cold chain;
- Training in standard operating procedures and the tasks relative to equipment maintenance (EVM);
- Establish a system for monitoring (including feedback) vaccine management, the cold chain and supportive supervision of staff members on all levels;
- Required from each level and analysis of the management of vaccines and consumables (including inventory management) to justify the purchase orders and maintenance of critical inventory levels, to avoid outages and excess inventory;
- Establish a “Health Logistics” project or course of study in an appropriate national academic institution to train a sufficient number of specialists in health logistics and at an affordable cost (compared to training abroad) to meet the needs of the healthcare system for supply chain managers (also called “health logistics specialists”). Make the staff thus trained available for all public health programs.

Information required for supply chain management

Describe all the actions in progress or planned relative to supply chain management information, their sources of financing and support from partners. Please specified in particular how the improvements to the operation of logistics management systems will increase the visibility of current and accurate information concerning the inventory of vaccines on each level of the vaccine supply chain.

The ministry has already established a mechanism to monitor the management of the supply chain with the creation of monthly management reports. The information on vaccine management is received from the district's in electronic form (DVD-MT), the compilation of which makes it possible to have information not only on the location and use of vaccine inventories but also on wastage and its cause. To strengthen these measures, the HSS2 finance program plans to:

- Apply standard operating procedures (SOP) to all aspects linked to management of vaccines and the cold chain proposed by the Worldwide EVM Initiative, and to adapt and disseminate them to all the levels.
- To raise awareness among the participants in the CPI program on all levels down to the BHC of the importance of the cold chain so that they are more attentive to management of vaccines and the cold chain.
- Organize systematic monitoring (including feedback) of management of vaccines and of the cold chain
- Provide supportive supervision of staff who are in charge of the management of vaccines on all levels
- On each level, ensure the analysis of the management of vaccines and consumables (including inventory management) to justify the purchase orders and maintenance of critical inventory levels, to avoid outages and excess inventory;

Optimized and efficient structuring of the supply system

Describe all the actions in progress or planned relative to supply chain optimization, their sources of financing and support from partners.

Plans call for a study on the efficiency cost of the transport of inputs (cost per dose, per kilometre, per axle).

In addition to the 656 solar-powered refrigerators purchased and installed by the Ministry with the support of Gavi, the WHO, UNICEF and the World Bank, the Ministry is planning to strengthen the supply system with:

- The installation of 49 refrigerators purchased by the State, which is in progress.
- The purchase of 30 solar-power refrigerators by UNICEF (Purchase order pending)
- The purchase of 19 solar-power refrigerators by THE STATE (Purchase order pending)
- Implementation of the EVM improvement plan (rehabilitation of the building, donation of computer equipment by UNICEF and the WHO).
- Acquisition of replacement parts for the kerosene-powered CCE by the State, the WHO and UNICEF.

Continuous improvement process

Describe all the activities in progress or planned relative to the continuous improvement process, their sources of financing and partner support

The Ministry has already organized the training of CCE maintenance technicians at the level of 22 regions and 113 districts to perform the installation and preventive maintenance of the solar-powered units. The following measures are planned for the continuous improvement of the supply system:

- Training provided and financed by the equipment supplier, November 2016
- Training of the technicians in preventive and curative maintenance of the CCE, planned in the HSS2 in 2017-2018 by the Ministry
- Training of the DEPI Logistics Manager on improving the management of the CCE (UNICEF).

4.3 Examination of the performance of activities during the initial support

The support provided during the third year and the following years will depend on the reports on the activities carried out during the initial support phase, as well as on their results.

4.4 Increased support phase

The second support phase from the CCE optimization platform will begin in the third year and continue thereafter.

Please provide a maximum of 3 pages explaining

- **2 to 4 urgent and ADDITIONAL CCE requirements** identified in the plan for the repair and expansion of the CCE and in the plan for the selection and strategic deployment of the equipment (see Annex 3 of the Application Instructions),

- **Description** of the activities planned and in progress relative to the other “fundamentals” of the supply chain.

4.4.1 ADDITIONAL Priority CCE needs

<div style="display: flex; align-items: center;"> <div style="border: 1px solid black; border-radius: 50%; width: 30px; height: 30px; display: flex; align-items: center; justify-content: center; margin-right: 10px;">i</div> <div> <p>The budgets <u>do not include</u> the operating costs</p> <p><i>(The operating costs will be financed by the Ministry of Health or by other partners)</i></p> </div> </div>	
Priority (ADDITIONAL) CCE need No. 1 <i>(Required information)</i>	<p>1. The need <i>Please include: type of activity (e.g. Replacement of obsolete CCE, addition of CCE to facilities that have none etc.); site (facility) specific CCE; type of equipment required, equipment warranty.</i></p> <p>2. Explanation <i>Please include: reasons for the urgent need (e.g. CCE coverage zone and/or low immunisation rate (Penta3), obstacles to parity, nomadic population etc.); current CCE coverage and immunisation coverage (Penta3) in the population area.</i></p> <p>3. Expected result <i>Please include: expected increase of the CCE and immunisation coverage (Penta3); anticipated progress in combating identified inequalities (describe, <u>in accordance with the country’s performance framework</u>)</i></p>
Total CCE ⁵ budget:	<i>The total budget includes the Gavi share as well as the joint investment from the country: \$(XX)</i>
Priority (Supplementary) CCE need No. 2	Need; explanation; expected result <i>(See the notes above on Priority Need No. 1)</i>
Total EEC Budget:	\$(XX)
Priority (Supplementary) CCE need No. 3	Need; explanation; expected result <i>(See the notes above on Priority Need No. 1)</i>
Total EEC Budget:	\$(XX)
Priority (Supplementary) CCE need No. 4	Need; explanation; expected result <i>(See the notes above on Priority Need No. 1)</i>
Total CCE budget:	\$(XX)
GRAND TOTAL CCE BUDGET: “Increased support” (years 3, 4, 5)	<p>\$(XX)</p> <p><i>This amount includes the Gavi share and the joint investment</i></p>

4.4.2 Activities planned relative to the other fundamental factors of the supply chain during the initial support phase

In this section, links must be established between the application for support relative to the CCE optimization platform, existing Gavi investments (in particular in the form of health system support) and support for the supply chain provided by other partners.

Describe actions in progress or planned relative to other “fundamental factors” of the supply chain (See section 3 of the Application Instructions) during the increased support phase,

⁵ The budget does not include the operating costs, which will be financed by the Ministry of Health and by other partners

including the sources of financing. *The responses in this section must be linked to the EVM improvement plan*

Supply chain managers

Describe all the actions in progress or planned to improve the availability and performance of the supply chain managers, their sources of financing and support from partners.

Information required for supply chain management

Describe all the actions in progress or planned relative to management information, their sources of financing and support from partners. Please specified in particular how the improvements to the operation of logistics management systems will increase the visibility of current and accurate information concerning the inventory of vaccines on each level of the vaccine supply chain.

Optimized and efficient structuring of the supply system

Describe all the actions in progress or planned relative to supply chain optimization, their sources of financing and support from partners.

Continuous improvement process

Describe all the actions in progress or planned relative to the continuous improvement process, their sources of financing and support from partners.

5. BUDGETING FORM

This section indicates the number of units requested and the corresponding budget. The IRC will estimate a maximum investment amount (and the approximate number of units) corresponding to the application for assistance for its approval recommendation and the subsequent decision by Gavi.

Nevertheless, the number of units, in consultation with the Secretariat and the national partners, can be modified during the drafting of the detailed operations plan based on the proposal to the platform, and the support may vary within the limits of the maximum approved amount.


The budgets must be prepared using the integrated budgeting template; *please refer to the [Application instructions, the technical guide for the Gavi CCE optimization platform, the budgeted prices for CCE and the TCO analysis tool.](#)*

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Important information: selection of the budgeting template

- ***The country can complete one of the two budgeting templates for the CCE optimization platform:***
 - *Budgeting template number 01, or*
 - *Budgeting template number 02*

Budgeting template for the CCE optimization platform 01 (strongly recommended)

<p><i>To be completed by countries that have selected generic category equipment that best meets their needs for CCE (e.g. "ILR 90L", i.e. Without specifying model or manufacturer)</i></p> <p><i>The planning price ranges are provided in this template.</i></p>	
Budgeting template for the CCE optimization platform 02	
<p><i>To be completed by countries that have selected specific equipment that best meets their CCE needs (specific model or manufacturer)</i></p> <p><i>The country's most prepare their budgets using the reference PEAK US prices and the estimates for the corresponding service bundles (depending on whether the equipment is on or off the grid and as a function of the estimated costs of the service bundles).</i></p> <p><i>The pre-budgeting price ranges are provided in this template.</i></p>	 MADAGASCAR - Worksheet in DOC F

6. PERFORMANCE FRAMEWORK

The countries must include certain indicators of the CCE optimization platform in the Performance Framework for the current and/or proposed Gavi HSS support, after approval of the proposal to the platform.

Depending on their particular context, countries must select the data sources best suited to reporting on the execution of the program and progress with reference to defined objectives. This process must be undertaken with the partners (who may provide technical assistance) and the Gavi Secretariat.

The updates of the scheduled reports, indicators and objectives will be part of the Gavi performance framework and of the annual joint appraisal process. Countries are expected to define pertinent intelligent indicators to be monitored and on the basis of which they will prepare their reports to demonstrate the interim results or impacts

Data Sources

The following data sources are examples of sources that the countries can choose to use for the definition of the performance framework indicators and objectives:

<ul style="list-style-type: none"> • DHIS2 • DVD-MT • HMIS • Joint WHO/UNICEF report template • Evaluations of the health facilities that have cold chain equipment 	<ul style="list-style-type: none"> • Vaccine inventory logs • Wastage reporting tools • Cold chain equipment inventories • On-site assessments of equipment functioning • Routine monitoring with continuous temperature monitoring devices
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Requirements in terms of tracking indicators and reporting

At the minimum, the countries must track and prepare reports on:

- **3 MANDATORY indicators of interim results; and**
- **1 to 3 ADDITIONAL interim results indicators**

MANDATORY indicators of interim results (must include the reference value, data source, objectives and frequency of reporting):

Highlight in blue the indicators that Madagascar plans to use to track implementation

1. Number of facilities that are replacing CCE (if necessary) with ILR SDD or long term passive devices of any model whatever, approved by the platform, regardless of the source of financing;
2. Number of establishments previously without equipment and now equipped with CCE approved by the platform (i.e.ILR, SDD or passive long-term devices); and
3. Precisely to find indicator proposed by the country to reflect adequate maintenance of the equipment; for example the percentage of facilities equipped with an operating⁶ cold chain, as demonstrated by the remote monitoring of temperature,

ADDITIONAL interim result indicators: *Countries must propose 1 to 3 interim results indicators to monitor the repair, expansion, maintenance and/or other fundamental factors of the supply chain (must include the reference value, data source, objectives and frequency of reporting):*

Examples of additional interim results indicators:

1. the operating condition of the cold chain equipment: proportion of operational CCE and proportion of districts that have at least 90% operational equipment;
2. Loss of sealed vials: proportion on the national level by district and facility;
3. Projected demand proportion: proportion of actual use compared to projections (vaccines);
4. Full availability of inventories: proportion of facilities/districts that have experienced no inventory outages
 - a. Inventory according to plan: percentage of facilities/warehouses/districts that have inventories between the minimum and maximum inventory levels;
5. Temperature alerts: Frequency and magnitude of heat and cold alarms per monitoring period (i.e., temperature excursion) and number of CCE devices with more than a certain level of temperature excursion;
6. The rate of utilization of the health facility dashboard, analysis and timely use during decision-making;
7. Timely and full delivery: proportion of purchase orders delivered in their entirety on time; **or**
8. Number of health managers trained and dispatched to monitor the supply chain and the rate of monitoring activities reported.

⁶ Definition of the indicator: Percentage of CCE in operation + (# of operational CCE units) / (total number of CCE units 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.