

UNICEF OPERATIONAL ISC GUIDANCE 2023



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In order to support regional and country offices in their planning and to ensure that all funding opportunities are effectively leveraged to contribute to the IA2030 goals, the HQ and Regional iSC team have put together this document to operationalize the UNICEF Immunization roadmap for the in-country supply chain functions. We hope that immunization and health focal points at country level will utilize these actions to mobilize resources and engage in processes such as the Gavi Full Portfolio Planning (FPP), National Immunization Strategy (NIS), World Bank Support and so on.

At a high level, the following priorities have been identified in the immunization roadmap:

- Strengthen national and subnational capacities to effectively manage stocks and cold chain equipment in order to improve effective vaccine management practices and storage capacities.
- Improve distribution and waste management systems for vaccines and PHC commodities across the supply chain.
- Maintain potency of vaccines and improved access to PHC services through deploying climate adaptive and sustainable technologies including solarization of health facilities.
- Develop and support innovative approaches and partnerships for last-mile delivery of vaccines and other essential commodities.
- Build capacity of health care workers in immunization supply chain functions and competencies.
- Strengthen national and subnational logistics information systems and capacity to use data for decision making.

In the following chapters, more detailed guidance on these priorities is provided.

1 Stock Management Strengthening

The COVID-19 pandemic and the subsequent surge in vaccine and devices shipments, short vaccine shelf lives, human resource gaps, massive national vaccination drives and the significant need to maintain focus on routine immunization in the midst of the pandemic led to the deployment of vaccine management specialists (VMS) across high-impact countries.

The VMS played a critical role in supporting National Logistics Working Groups (NLWGs) to improve end-to-end stock management, track expiry/wastage, improve temperature monitoring, accountability in-country vaccine distribution and redistribution and contribute to capacity development.

Encouraged by the contributions and achievements of the VMS in 2022, the introduction of GAVI's comprehensive vaccine management (CVM) approach and emerging UNICEF requirements, the VMSs' areas of responsibilities, key tasks and deliverables have been reviewed and updated with UNICEF priorities and host country needs and context. A key emphasis is the greater focus on routine immunization catchup and recovery strategies.

Lessons learned from VMS deployments in 2022, the greater need to focus on catchup and recovery, the introduction of the CVM approach and country priorities required to adopt the VMSs' TOR. Key expected deliverables are outlined below for country office consideration and adaptations as per their operational contexts and needs

Key Deliverables

I) Stock visibility, data management and use

- a. Map cold stores, their target population, and min/max thresholds.
- b. Assess the country's existing stock inventory management system and its saturation and maturity (how far down the supply chain is the system used, reporting frequency, monitoring, means of verification and data quality).
- c. Document dataflows, validation protocols and accountability frameworks.
- d. Establish a baseline of current reporting timeframes from the health facility to the district, regional and national levels and define measurable and achievable targets to reduce the time between data collection, analysis and sharing for use.
- e. Share the monthly quantitative vaccine and devices stock report (three iSC levels) with the regional office and HQ.
- f. Prepare and share the monthly qualitative stock situation report.
- g. Review and provide feedback on the Thrive360 global monthly vaccine availability reports
- h. Conduct data validation spot-checks and supportive supervision visits at randomly selected cold stores.

II) Supply chain management

- i. Support NLWGs/EPI with demand, micro and distribution and redistribution planning.
- j. Contribute to temperature monitoring in cold stores and during transit.
- k. Highlight iSC challenges at national and subnational levels and mitigation plans.
- l. Assess the min-max-reorder and push-pull protocols to ensure they align with the latest global guidelines and measure stores' compliance with such protocols/SOPs with achievable recommendations and status tracking.
- m. Cluster stores/district based on performance (frequency and duration of stockouts, excess stock incidents).

- n. Develop support plans for low-performing stores/districts, implement improvement plans and track status monthly.
- o. Ensure deployment and expansion of tools, standard operating procedures and best practices align with the global guidance to ensure performance monitoring over time and comparison with other countries. This will include leveraging appropriate technologies to improve and automate vaccine inventories at all supply chain levels.

III) Management and Coordination

- p. Support the National EPI Manager, National Logistics Working Group and Emergency Operations centre with data collection, analysis and use for informed planning and decision making. Especially with vaccines and devices arrivals, stock-on-hand, temperature monitoring, consumption, expiry, open and closed vial wastage and other operational challenges).
- q. Support vaccine forecasting processes in the country, analyse and compare forecasted vs actual demand/consumption and contribute to the overall forecast strengthening agenda.

IV) Capacity building

- r. Support identification of the training needs with a long-term vision, and match the needs with available global training packages such as Technet and zero-dose webinar series and face-to-face training opportunities.
- s. Provide on-the-job training and transfer skills to the national counterpart staff, especially at subnational levels.

V) Monitoring and supportive supervision

- t. Contribute to supportive supervision and monitoring activities. Promote join-monitoring visits with the government and other partners.
- u. Develop/promote/scale up relevant monitoring and supportive supervision tool and checklists. Prepare a semi/annual work plan, train field supervisors and support analysis and sharing of findings.

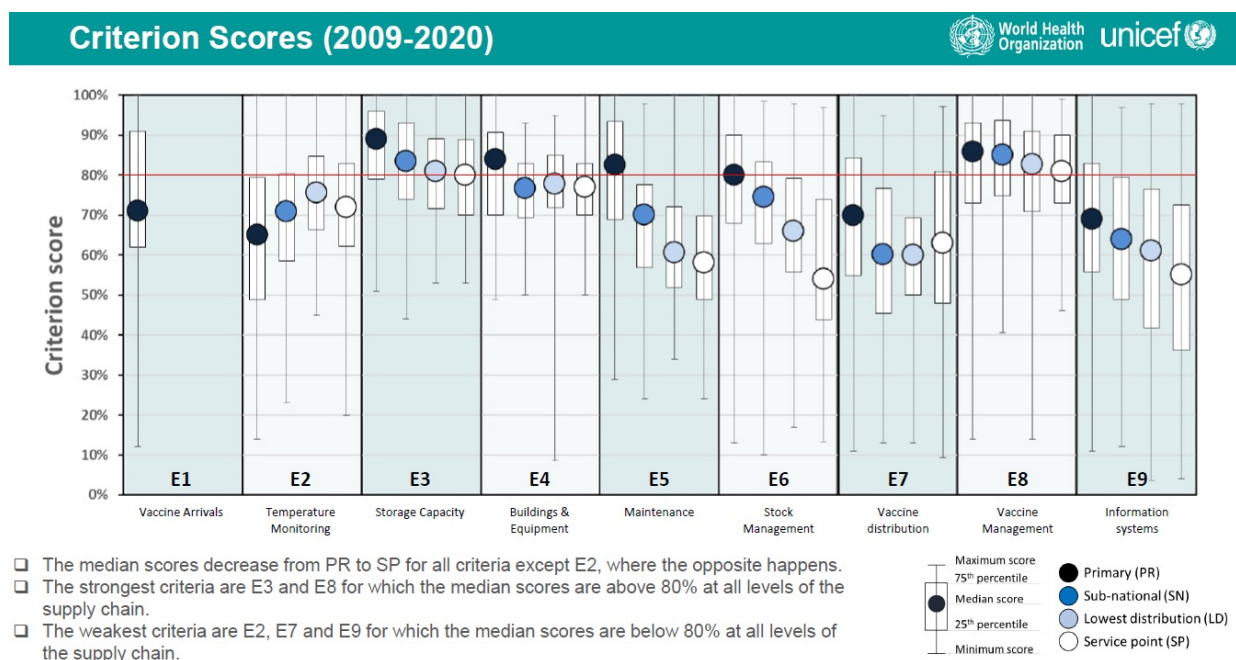
2 Supply Chain Improvement

A. Effective Vaccine Management Assessments (EVMAs) and Continuous Improvement Plans (cIPs)

Appropriate and effective end to end in-country vaccine management (from vaccine arrival to waste management) is critical for governments, partners, and donors to achieve set goals of immunizing children (and others) with potent vaccines through contributing to vaccine potency, availability, reach and efficiencies.

UNICEF, WHO and partners support several initiatives to ensure that vaccines are effectively managed.

The Effective Vaccine Management (EVM) initiative assesses supply chain performance using standard criteria, identifies bottlenecks, and develops recommendations for improvement. The initiative has long been a critical continuous improvement approach to strengthening immunization supply chains. Findings from the 93 assessments conducted between 2009 and 2020 showed varied performance across supply chain criteria with vaccine distribution, information systems and maintenance scoring lower than storage capacity, vaccine management and buildings and equipment - reflecting outcomes of increased CCE and infrastructure-related investments such as from the Gavi CCEOP and HSS.

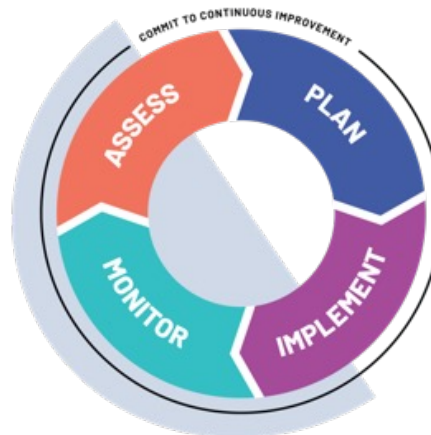


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The mobile-based version- EVM 2¹, was launched in 2019 based on lessons from almost two decades of implementing the EVM initiative. Despite operationalization set back due to the COVID-19 pandemic, EVM 2 has now been steadily rolled out in about 40 countries.

2019	2020	2021	2022
Iraq	Cambodia	Bangladesh	Comoros
Maldives	Cameroon	Burundi	Gambia
Pakistan	Dibouti	Côte d'Ivoire	Guinea
	Indonesia	Eritrea	India
	Kenya	Ghana	Jordan
	Madagascar	Lebanon	Kyrgyzstan
	Nepal	Malawi	Liberia
	Niger	Mongolia	Mauritania
	Sudan	Nigeria	Qatar
	Uganda	Sri Lanka	Sao Tome and Principe
	Viet Nam	Tanzania	Tajikistan
		Togo	Sierra Leone
		Zambia	Tajikistan
			Tunisia
			Uzbekistan

EVM 2 is premised on a continuous improvement approach with the EVM assessment only one component of the multi-step- assess, plan, implement, monitor process designed to not only identify supply chain bottlenecks but to develop, implement, monitor, and report on appropriate improvement activities across supply chain functions and levels.



Since the launch of EVM 2, about 40 cIPs have been developed and/or are being finalized (and recently) with the aid of the cIP development tool, downloadable after completing EVM assessments.

Emerging benefits (based on user experiences) of deploying EVM 2 include a more robust dataset, enable frequent assessment opportunities (including country-wide and targeted assessments), facilitate on the spot bottlenecks and improvement feedback to assessed sites etc.



1. [Effective Vaccine Management \(EVM\)](#)

Continuous Improvement Plan (cIP) Development Tool

Country: Lagavulin
 Assessment name: Lagavulin EVM Assessment 05/2022
 Assessment description: PHI of Lagavulin, 5 Regional PHI Centers and 11 Primary Health Centers
 Start Date: 23/05/2022

Target Score: 80%

Plan date: 11/07/2022
 Completion Status: 89%

Version 2.2 - October 2023

Effective Vaccine Management (EVM)
 Setting a standard for the vaccine supply chain

<https://extranet.who.int/evm2/web>

Navigation: Cover | Instructions | Heat Map | C1 | C2 | C3 | C4 | C5 | C6 | O | P | Targets | Operational Plan | Budget Summary | Completion Status

B. Supply chain Continuous Improvement Plans (SCIP) Implementation Tool

To bridge the current gap that exists in countries to systematically develop, implement, monitor, and report implementation of continuous improvement activities, the Supply chain Continuous Improvement Plans (SCIP) Implementation Tool is being developed. Additionally, this will catalyze resource mobilization towards planned cIPs and encourage multi-sectoral collaboration.

C. EVMAs and cIPs Actions

For 2023 and beyond, the following areas are critical for countries in planning, delivering and leveraging findings from EVM assessments and effectively developing, implementing, monitoring and reporting fit-for-purpose continuous improvement plans:

- i. **Onboarding stakeholders for EVMA and cIP development:** Early engagement (working with regional and headquarter colleagues) is critical to successfully delivering EVM assessments and developing and reporting on cIPs. Guidelines and resources have been produced by WHO and UNICEF to aid country EVM onboarding and capacity building. These materials can be accessed via the [TechNet EVM Repository](#) and content and recordings from the [2022 Global EVM Capacity Building Workshop](#) (including managers and assessor trainings) can provide countries with a comprehensive overview of the EVM, how to plan for and deliver EVM assessments and how to develop and implement cIPs.
- ii. **Targeted assessments:** In addition to planning for and delivering national EVM assessments every 3 to 5 years, countries can take the opportunity enabled by EVM 2 to strategically plan for targeted assessments in critical (e.g. weak) supply chain areas or specific supply chain level(s) e.g., as part of broader supply chain/immunization programming, some countries have planned annual targeted assessments. Funding required for EVMA and cIPs development etc will depend on scope, number of sites, frequency (e.g. of targeted assessments) and funding windows such as Gavi Targeted Country Assistance (TCA) or during Full Portfolio planning (HSS).
- iii. **Capacity building and roll-out of Supply chain Continuous Improvement Plans (SCIP) Tool:** As the SCIP tool would be available from Q2-Q3 2023, country stakeholders should plan to build the capacity of National and Sub-National Logistics Working Group Members (SNLWGs) and staff at different levels of the supply chain to deploy, uptake, and use the SCIP for developing, implementing, monitoring and reporting on continuous improvement plans.
- iv. **Engage UNICEF LTAs Institutions:** UNICEF launched LTAs with five (5) regional and local institutions to facilitate increased institutionalization of the EVM initiative in regions and countries. Countries are encouraged to maximize use of [these UNICEF EVM LTAs](#) in addition to their in-country institutions.
- v. **Leverage EVM framework for capacity building:** The EVM framework is designed around supply chain standards which benchmark country immunization supply chains across a wide range of parameters. Besides using these framework's standards for national or targeted assessments, countries can further leverage them for building the capacities of supply chain staff at national and sub-national levels.

3 Cold Chain Equipment Management

A well-functioning cold chain and logistics system is critical for adequate vaccine deliveries and constitutes the backbone for ensuring potent vaccines are being delivered to reach the last mile and reducing the number of zero-dose children.

As part of the pandemic response larger scale investments in cold chain were made and tailored technical assistance for immunization supply chain management through private sector engagement was provided in support of new vaccine introduction and strengthening the immunization system.

As has been seen with the pandemic response the regular immunization programme was negatively impacted by the pandemic and with the “scale back and up” strategy renewed efforts are being made for strengthening the immunization programme, which also includes strengthening the cold chain systems in countries.

Key priority areas related to cold chain systems for improvements and investments are:

- Availability of complete and updated cold chain equipment (CCE) inventories for informed decision making related to maintenance, decommissioning and planning for new CCE;
- Building efficient and functional maintenance systems – for planned preventive maintenance and corrective maintenance;
- Ensuring adequate **temperature monitoring systems** are in place to safe-guard the vaccines
- Ensuring sufficient **cold chain storage capacity** is available at all supply chain levels – including for new vaccine introductions up to 2030. Further, repurposing activities related to the Ultra-low temperature freezers as feasible within the country’s Covid-19 vaccination plans;
- Planning for associated activities related to procurement of cold chain as part of project management – to ensure timely distribution, quality installation and end-user training of the equipment.

Further details are available in the below sub-sections:

A. Inventory Management

As part of building sustainable systems and within the Gavi Digital Strategy, looking forward building on eLMIS systems with GS1 barcodes would contribute to a better asset management of the cold chain as well as better visibility down to last mile, which is where often the biggest gaps are seen in inventory data with highest number of equipment deployed and least visibility is available for cold chain management. A CCE inventory application is developed for last mile data collection that is based on GS1 2D barcode as a new module to DHIS2, is interfacing with the WHO CCIGAT and interoperable with other systems in countries.

Especially through Government CCEOP applications the weakness of a countries CCE inventory surfaces. Through collaborative efforts with Gavi, UNICEF has committed to support Government with quality and updated CCE inventories – especially related to countries with upcoming CCEOP applications.

Countries, planning for CCEOP applications are encouraged to include budget for CCE inventory updates.

Governments interested and committed in piloting the GSI compliant barcode module for CCE inventory data collection at last mile, are encouraged to include budget for such pilot - from project management, training, data collection, validation, analysis and project evaluation.

B. Maintenance Systems

As significant investments have been and continue being made in cold chain, both for the C-19 pandemic response as well as for regular RI activities, the maintenance and decommissioning aspects become more and more imminent, which have not been on the priority agenda for most countries. These areas require urgent attention to look both into innovative solutions as well as through close country engagement on maintenance and decommissioning solutions to AMC countries.

UNICEF HQ will be launching a Survey on Decommissioning & Safe Disposal of Cold Chain Equipment. This will form the basis for country engagement to identify key challenges and develop country specific decommissioning plans for countries where this is not yet in place. Further, the area of maintenance and decommissioning will be a priority area for elevation to donors and manufacturers to ensure sustainable solutions can be implemented.

Countries are encouraged to ensure budgets are earmarked and made available for both maintenance activities as well as for decommissioning, including safe disposal of CCE.

For Governments that do not have an efficient maintenance system in place, it is encouraged to ensure budgets are made available for development of such systems.

C. RTMs

Temperatures for vaccine delivery and distribution are monitored throughout the vaccine cold chain from manufacturer to receipt at the point of vaccination down to last mile.

To avoid vaccines are exposed to significant temperature excursion (hot/cold), the routine monitoring of temperatures in cold chain equipment is critical as part of good storage and distribution practices to assess the functionality and performance of the equipment. Continued temperature monitoring and recording will allow for any detected problems to be addressed through corrective actions in a timely manner to ensure the vaccine potency and reduction of closed vial wastage.

In view of the above it is important that cold chain equipment and transportation is equipped with temperature monitoring devices designed for the specific application (e.g. monitoring a refrigerator, WIC/WIF room, etc.). For further information and guidance, please refer to <https://www.who.int/publications/i/item/WHO-IVB-15.04>.

For procurement of WIC/WIF rooms Remote Temperature Monitoring Devices (RTMDs) need to be included. Further, it is important to also ensure that activities related to temperature mapping are planned for as part of the installation/commissioning of the WIC/WIF rooms – this is to ensure that the vaccines based on their sensitivity are kept in the right area of the WIC/WIF rooms to avoid hot/cold spots. The temperature mapping activities also apply for refrigerated trucks.

Other important aspects related to the operation and implementation is to ensure annual subscriptions including renewals are budgeted for and managed in a timely manner. For easy reference below table is included to support the budgeting exercise.

Availability of adequate HR resources as well as training of users is critical to ensure effective use of the data for informed decision making and corrective actions as well as regular maintenance activities related to RTM systems.

Adequate HR and review structures to manage RTM system and regularly review and follow-up on data, RTM system maintenance and annual subscriptions.

Countries are encouraged to ensure budgets are earmarked and made available for

- a. Development of a data management strategy that feeds into a broader eLMIS;
- b. Installation and commissioning of RTM systems
- c. Subscription fees for RTM devices/systems
- d. TMD/RTMD with longer battery life
- e. Specific to WIC/WIFR and reefer trucks temperature mapping activities critical for vaccine storage

D. CCE Procurement

Given the heavy investment in CCE for the pandemic response through multiple donors, it is important that any new CCE investment is based on an updated CCE inventory, latest immunization schedule incl. the C-19 vaccination strategy, NVI as well as taking into account rehabilitation plans and any pipeline procurements/donations.

Any new procurement of regular cold chain should be WHO pre-qualified and ideally be classified as “Grade A” equipment. [Further RTMDs should be included as part of the new EMS strategy]

Procurement of Ultra-low temperature freezers (ULT-F) should only be done for any new country introducing the Pfizer BioNTech Comirnaty vaccine. During 2021 and 2022 UNICEF established with support from multiple donors globally an ultra-cold chain (UCC) infrastructure across >70 AMC countries. Based on the UCC inventory received from countries with ULT freezers and the integration of C-19 into RI, generally sufficient UCC capacity is available in countries with current Pfizer BioNTech vaccine deliveries. It is thus not encouraged for those countries to invest further in ULT freezers. Please refer to further details in below section.

Specific to UCC and C-19 vaccination

With the declaration of the pandemic envisaged to come to an end soon (2023/2024), it is important to be able to manage the transition period in a responsible manner for integration of Covid-19 activities into the RI Programme, especially with the impacts seen on the regular immunization activities.

As Gavi Alliance Partners we have responsibility to support countries with the routinization of Covid-19, including supporting Governments to manage the UCC investment in a responsible manner that will not have a negative carbon footprint on the environment in view of the significant investments done for building up a UCC infrastructure across Pfizer recipient AMC countries.

The scope and integration work on UCC related to repurposing of the ULT freezers will depend on Government plans for continued Covid-19 vaccinations and the type of Covid-19 vaccine being the country choice for vaccination. As long as PfizerBioNTech vaccines are still being delivered to countries with a formulation that requires ULT storage, the ULT freezers will still be required. Though for some countries it may

be at lower scale, all depending on Government policies and plans. Nevertheless, the planning for repurposing of ULT freezers will be required at some stage and as part of supporting Governments with a responsible transition of the UCC into RI or other Programmes into a post-pandemic modality. We have seen a number of countries deploying ULT freezers at sub-national level, incl. down to district level. With the current Pfizer RTU/TRIS formulations, ULT freezers should be kept at central level. The lower down the supply chain level the higher the risk of closed vial wastage. Please refer to enclosed Short Guidance on UCC Deployment.

UNICEF HQ is currently developing guidelines on repurposing of ULT freezers, which are planned to be issued during Q1 2023 to provide guidance to countries on how to manage the transition period and how to handle these ULT freezers. UNICEF HQ will provide training through webinar sessions accordingly. This will relate to maintenance, redeployment, repurposing, transfers to other Programmes and decommissioning aspects.

Based on Government plans on Covid-19 vaccines, country engagements are planned for development of country implementation plans for the UCC whether for RI integration or repurposing for other programmes or ensuring safe disposal.

Countries are encouraged to ensure budgets are made available for the routinization/ integration activities related to repurposing of ULT freezers

E. Project Management

The introduction of service bundle included as part of the procurement package of cold chain equipment under the CCEOP project has been well received by countries and has proven to ensure quality installation of equipment and not least the provision of end-user training. Further, it has ensured that newly arrived cold chain equipment is not remaining in warehouses due to lack of funds for the deployment and installation.

The CCEOP project has thus contributed to addressing the aspects of 'fundamental infrastructure' in the Gavi ISC strategy by increasing functional storage capacity at country level down to last mile. This has also been largely reflected in the EVM scores related to cold chain storage capacities.

Acknowledging that Gavi-eligible countries besides the CCEOP project are also procuring cold chain equipment through other bilateral agreements at country level – most of these incoming procurement requests do not include funds for distribution, installation, end-user training and maintenance. Further, resources for HR may also be required depending on the size of the project for coordination and project management.

These aspects also apply to non-Gavi eligible countries that are procuring cold chain equipment.

Countries planning for cold chain procurement are encouraged to ensure the below components are also budgeted for besides the cost of equipment, spare parts, TMD and shipment:

- Distribution
- Installation
- End user training
- Maintenance
- HR resources.

4 Primary Health Care Infrastructure

4.1. Health Facility Solar Electrification

A. Objectives

Primary health care facilities across low- and middle-income countries lack the infrastructure necessary to provide safe, quality health services. At the same time, the health care sector is a substantial contributor to greenhouse gas emissions, accounting for approximately 4–5% of total emissions globally. As such, there is growing appreciation that healthcare investments must consider environmental and climate implications.

A 2018 report on 78 low- and middle-income countries (LMICs) found that 59% of health care facilities are without reliable electricity. It is estimated that about 1 billion people worldwide are served by health care facilities without reliable electricity. The consequences of poorly equipped health care facilities are significant. Primary health care services are necessary for child health, such as labor and delivery, pre- and postnatal care, and vaccinations, are contingent upon the appropriate physical infrastructure of the health facility. Reliable energy is critical for a wide variety of operations at a health care facility, from powering diagnostic and medical equipment to telecommunication technologies and essential services including refrigeration, space conditioning, and the provision of clean water. For a healthcare facility to offer services 24 hours a day, it must have sufficient lighting.

UNICEF's support to essential primary health care infrastructure will prioritize essential public health functions while addressing the environmental determinants of health and reducing the environmental impacts of health care delivery. In alignment with WHO guidance, UNICEF has developed an integrated strategy for climate resilient, environmentally sustainable health care facilities.

B. Goals and strategies on climate resilience and PHC infrastructure

Efforts to strengthen climate resilient, environmentally sustainable in health care facilities align with UNICEF's strategic approach to health and WASH, as well as wider initiatives within the sector to improve access to quality primary health care services.

2030 Sustainable Development Goals: UNICEF's efforts to strengthen climate resilience and environmental sustainability in HCFs supports multiple Sustainable Development Goals, including SDG 3 (Health and Wellbeing), SDG 6 (Water and Sanitation), and SDG 7 (Energy).

Health Strategy 2016-2030: The UNICEF Health Strategy 2016-2030 aims to end preventable maternal, newborn and child deaths and promote the health and development of all children. One of the approaches to do this is strengthening health service delivery, while promoting integrated, multi-sectoral policies and programmes.

UNICEF 2022-2025 Strategic Plan: The Strategic Plan 2022-2025 includes the right for every child to live in a safe and sustainable climate and environment.

Healthy Environments for Healthy

Children Global Programme Framework: The 'Healthy Environments for Healthy Children: Global Programme Framework' aims to integrate this organizational priority of climate change and environmental degradation across UNICEF's health programme. The first of five major actions that UNICEF's Health Programme can pursue through this Healthy Environments framework is to strengthen climate-resilience and environmental sustainability in health care facilities.

Operational Framework for Primary Health Care:

WHO's operational framework for primary health care aims to strengthen health systems and support countries in scaling up national implementation efforts on primary health care. This framework recognizes the need for physical infrastructure: Secure and accessible health facilities to provide effective services with reliable water, sanitation and waste disposal/recycling, telecommunications connectivity, and a power supply, as well as transport systems that can connect patients to other care providers.

C. Action plan

For healthcare facilities to provide 24-hour service, they must be equipped with a reliable energy supply. UNICEF is promoting the use of clean and sustainable energy at primary health care facilities using renewable energy technologies, such as solar photovoltaic systems. This 24/7 continuous supply of electricity will ensure that the health care facility can deliver uninterrupted health services even at night hours and in times of natural calamities.

Health Facility Solar Electrification (HFSE) provides reliable and clean electricity for Primary Health Care (PHC) Facilities to:

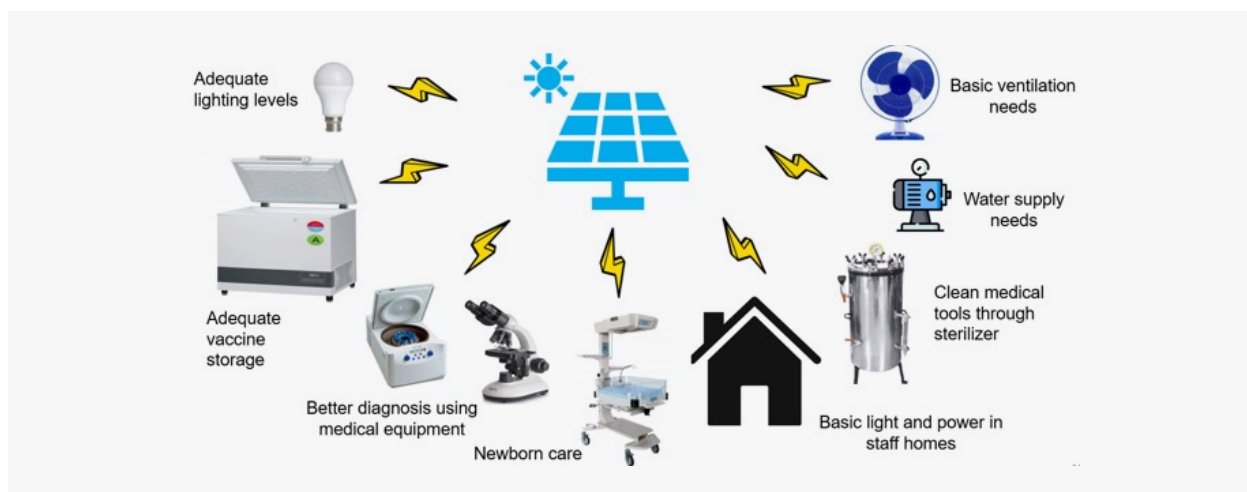
- To offer improved essential health services
- To improve the access to health services
- To provide better working and living conditions for health staff
- To make the PHC a climate resilient infrastructure



D. What do we achieve by solarizing health facilities?

HFSE package can be designed to meet the energy demand to run all the essential medical and non-medical equipment to ensure that the facility delivers high quality medical care services. The electrification of health facility includes lighting for entire facility, special needs for maternity wards, provision for power other appliances such as refrigerator, baby warmers (incubators), suction pumps, fans, water pump and electricity needs of staff accommodation for those that are attached to health facilities. This also includes the provision of powering television for IPC, mobile phone charging points for staff and visiting patients are among the key facilities of solarization. This supports laboratory functions, storage of essential PHC commodities that require refrigeration (Oxytocin, Insulin, COVID-19 and other testing kits etc.) maternal and child health interventions and overall positive working environment of health workers.

Uses of HFSE equipment



E. Implementation

i. Phase 1: Planning and preparation

Electrification of facilities requires scoping of needs, landscaping of stakeholders, review of ecosystem from sustainability lens, and alignment of national health strategies & budgets for 10 years of operations and maintenance. This stage involves understanding of solarization packages, development of investments cases based on needs for solarization and donor engagement to achieve the targets.

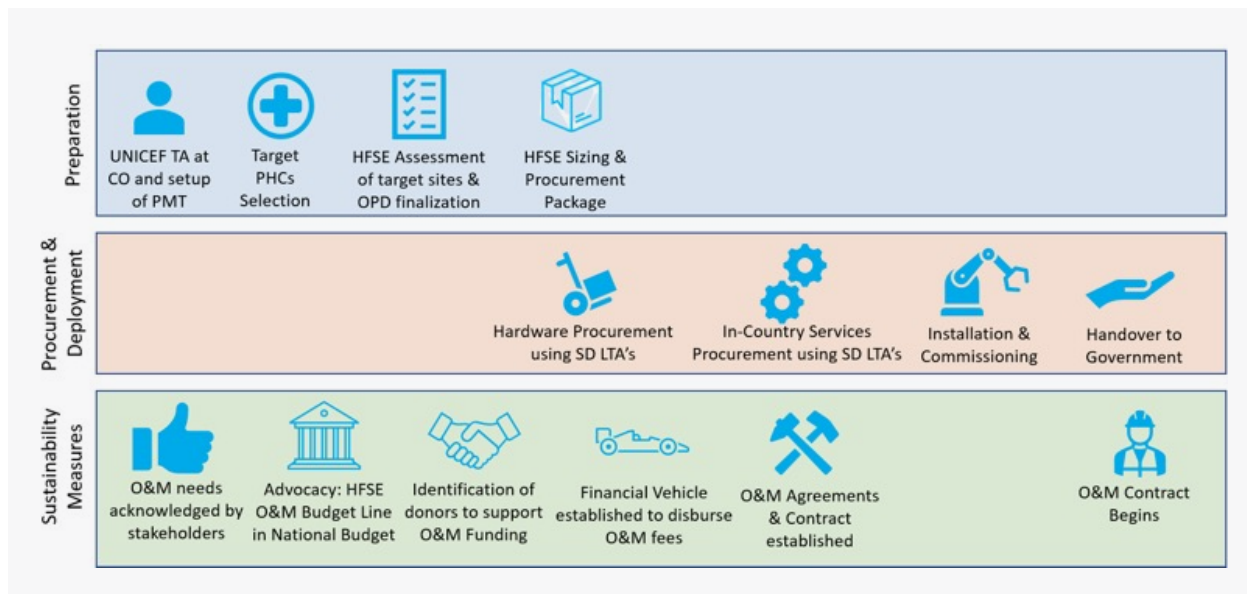
ii. Phase 2: Implementation

This phase is broadly classified in three sub-phases: a) Preparatory actions at country level: setting up project management and monitoring team (PMT), identification of high impact health facilities for solarization, preparation of ODP and identification of appropriate sizing of solarization packages (with support from SD); b) procurement and deployment actions at supply division following the ODP submitted by country; and c) establishing sustainability measures parallel to deployment at country level.

Phase 1 Step by Step Guide



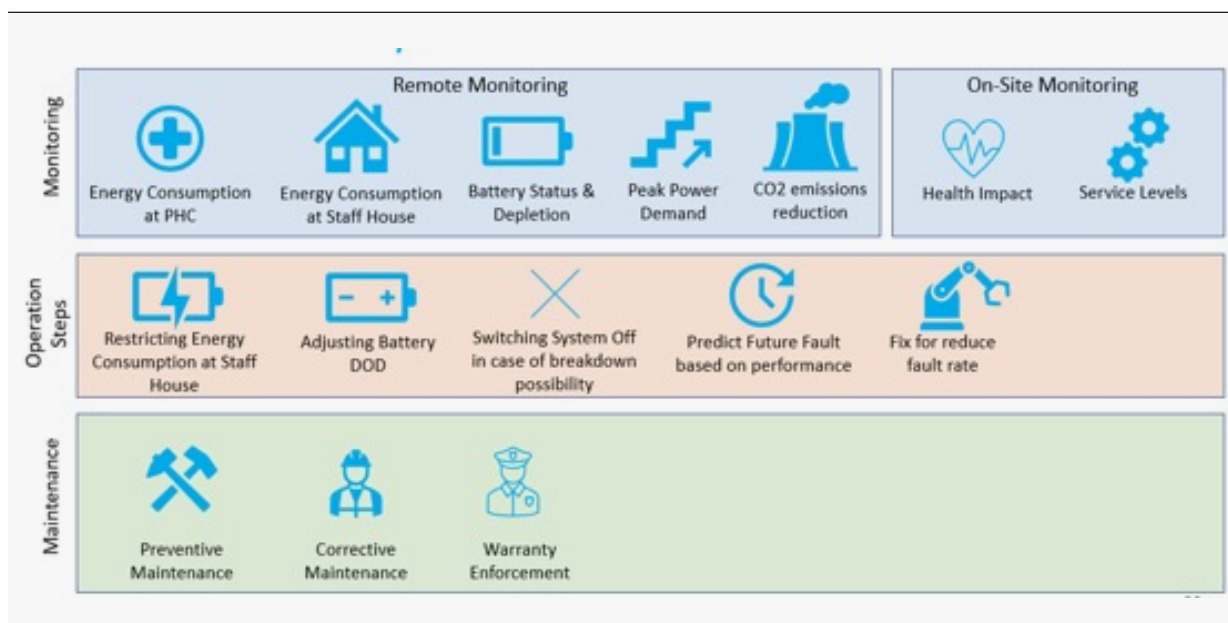
Phase 2 Step by Step Guide



iii. Phase 3: Post implementation Monitoring

Post implementation stage is focused on monitoring performance of the system, timely preventive and curative maintenance of system and establishing governance for monitoring and evaluation (KPIs). This includes annual funds management for O&M, contracts management of service providers and sustainability for 10 years at a minimum. UNICEF HQ/SD will support COs in establishing such mechanisms in place in parallel to deployment of systems.

Phase 3 Step by Step Guide

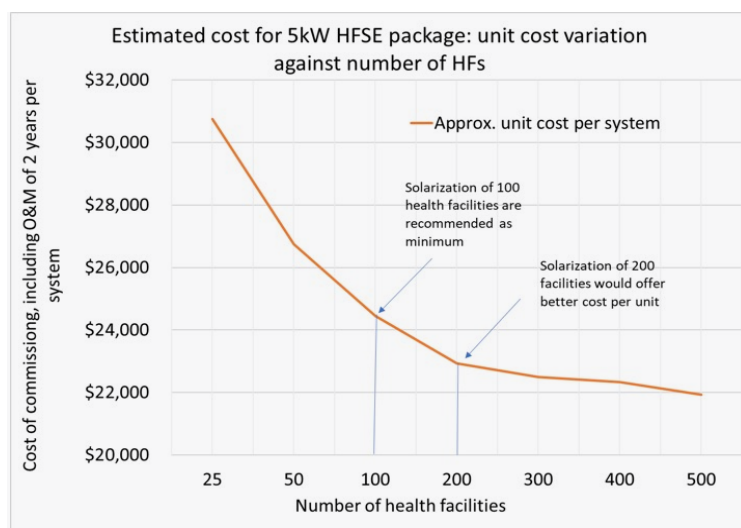


F. Budget estimate scenarios for varying HFSE targets

Energy demand of a health facility depends on many factors such as the type and quality of health services offered and catchment population. Therefore, different sizes of HFSE packages are needed to cater to the energy needs of different types of health facilities. LTAs established by the Supply Division for Goods and Services can supply different HFSE packages on need basis. However, for planning and budgetary purposes, the costing of a 5-kW solar package is considered, as this is the most suitable size for health care facilities documented as a global experience.

The cost of deployment has a direct relationship with number of systems, there are cost benefits of going with minimum of 100 units and ideally 200 units per country recommended for volume discounts (on capital hardware costs, deployment costs and O&M costs). Figure 5 and table 1 shows cost estimates for various slabs of solarizing number of health facilities.

Per Unit Cost of 5 kW vs Number of Target HF



Estimated budget needed for different Target HFSE scenarios

Number of HF	Service Cost in USD (\$)					
	Hardware costs estimates for 5 kW	Service bundle estimates (Freight, Installation, Transport, O&M 2 years)	TA costs (for 18 months)	ODP costs	Total estimate	Approx. unit cost per system
25	350,000	207,500	200,000	12,500	770,000	30,800
50	700,000	415,000	200,000	25,000	1,340,000	26,800
100	1,372,000	822,200	200,000	50,000	2,444,200	24,442
200	2,660,000	1,626,000	200,000	100,000	4,586,000	22,930
300	3,990,000	2,409,000	200,000	150,000	6,749,000	22,497
400	5,320,000	3,212,000	200,000	200,000	8,932,000	22,330
500	6,510,000	4,001,000	200,000	250,000	10,961,000	21,922

G. Timelines for implementation

It is estimated that the implementation of 100 health facilities would take about 18 months from commitment of funds and establishing the target number of health facilities for solarization. There might be some variation of timeline for a few activities for a reduced or higher number of sites.

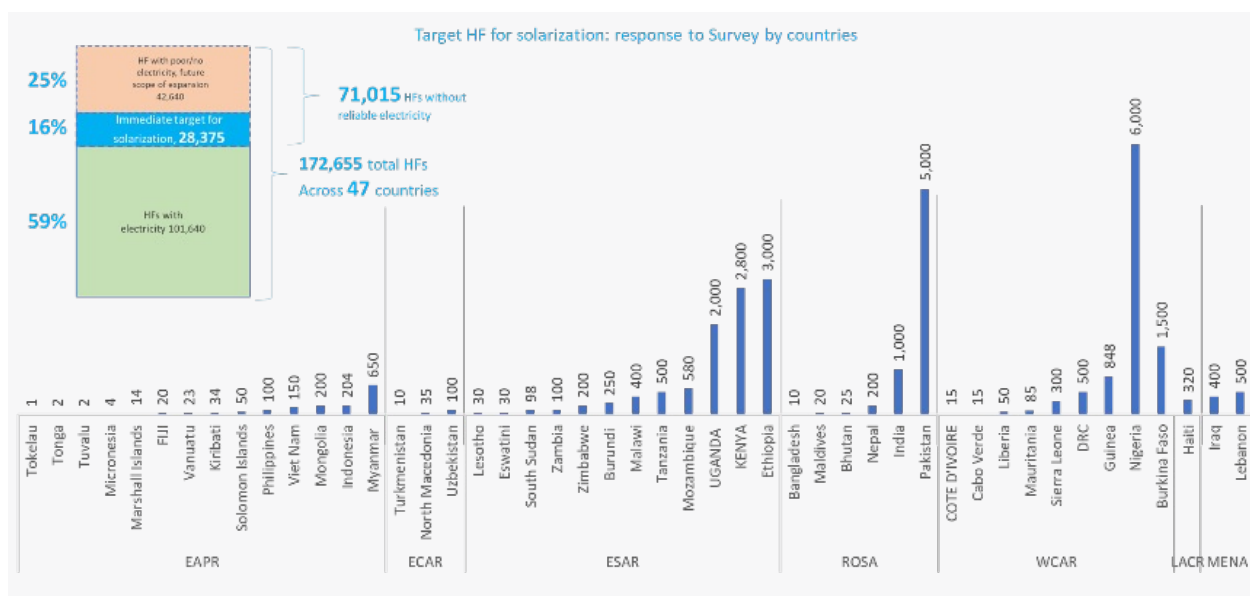
H. Global demand of HFSE as of 2022

Figure 7 below shows the region-wise demand for solarization of health facilities. HQ provided support, in Q4 of 2022, in capacity building/funds for assessment of health facilities in these countries and estimate funds needed for solarization of target facilities. It is estimated that about 750 million USD is needed to fund these global needs. While HQ is engaged in fund raising for this initiative, countries are encouraged to use the available resources to solarize prioritized health facilities.

Timelines for HFSE implementation

<u>Timelines</u>		Conducted by	Supported by	Year 1				Year 2				Year 3				Year 4			
Activity				Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Phase 2: Implementation Phase	Established Targets & Funds Confirmation	CO																	
	Recruitment of TA	CO	PG																
	Capacity building of TA	PG	SD																
	Establishing PMT++	TA & CO	PG																
	Mapping of Energy & Health Stakeholders	TA & CO	PG																
	Preparation of ODP ++	TA & CO	PG																
	Verification, Quality Check and approval of ODP++	SD	TA																
	Agreements with Stakeholders for long term O&M	CO	PG																
	Supply of HFSE Packages	SD through Service provider																	
Installation and Commissioning	SD through Service provider																		
Phase 3 Operation	2 Years Warranty/ In built-O&M	SD through Service provider	SD, CO																
	O&M managed by local stakeholder after 2 yrs	Local Stakeholder	CO																

HFSE demand per country, HFSE survey Aug 2022



4.2 Waste Management

Data compiled from extensive surveys by 2019 (prior to outbreak of COVID-19) indicate that more than two thirds of health facilities in low and middle-income economies do not practice safe and environmentally sustainable healthcare waste management practices. The bulk of infectious waste contributing to this finding is generated in peripheral primary health facilities offering antenatal/postnatal care, infant delivery, newborn care, contraceptive distribution, family planning counselling: and curative care for common ailments, injectable immunization, and sexually transmitted infections (STIs), malaria and measles treatments.

Lack of resources and non-prioritization of resource allocations both financial and technical, for acquiring and operating the best available techniques and technologies are the key challenges to this major waste management shortcoming in resource-limited low and middle-income economies

The Global analysis of healthcare waste in the context of COVID-19 published by WHO in February 2022 informs that three in ten of the world's healthcare facilities lack systems to segregate waste, while in the least developed countries less than a third of facilities have a basic healthcare waste management system for safe treatment of medical waste from the COVID-19 pandemic. The response to the COVID-19 pandemic accelerated the demand, use and demand for disposal of medical waste - especially discarded personal protective equipment (PPE) and single-use plastics, which is causing significant challenges for infrastructure and strategic management and waste disposal globally, including in poorly prepared and equipped resource-constrained economies.

UNICEF PG is supporting countries in planning sustainable and context specific solutions for health care waste management of primary health centers using technical assistance through third party experts in healthcare waste management. Following approach is recommended for implementing healthcare waste management (HCWM) solutions at primary health facilities.

1. **Situation analysis:** A detailed HCWM assessment using WHO recommended tools and methodology should be done as first step towards documenting the situation analysis of HCWM in primary health care facilities in the country. The overall objective of the HCWM Assessment is to identify the gaps in current practices of HCWM compared with WHO recommended best practice and propose an approach to bridge these gaps with contextual recommendation on best suitable technologies for waste management
2. **Action/improvement plan:** The HCWM assessment should lead to comprehensive budgeted action plan with timelines for implementation. The plan should be approved and formally endorsed by respective authorities in the country, followed by integration of plan within national health strategies of coming years. The deployment of plan should be steered by national HCWM committee, the committee is normally represented by Ministry of Health, Ministry of Environment, Ministry of Finance, partner UN organizations in the country, NGOs and agencies that are engaged/responsible for safe management of healthcare waste.
3. **Implementation of action plan:** In order for the action plan to be fully resourced, requires funds to be either secured from a national pool of resources or external support from donor agencies. The fully funded plan should be implemented in phased manner (appropriate policies and SOPs to be in place, procurement and deployment of technologies, capacity building of health workers in appropriate handling and managing the waste, establishment of optimum reverse supply chain logistics, monitoring and evaluation) and monitored by HCWM committee.
4. **Re-evaluation/assessment:** The documentation of HCWM situational analysis should be reviewed/ revised every 5 years to reflect additional needs due to changes in quantities, categories of waste being generated over period of time.

Following these recommendations, following methodology is proposed for implementing solutions on managing healthcare waste.

Overview plan on implementing solutions for HCWM in countries.

Steps	Actions	Timeframe	Source of funds
Situational analysis and planning	Conduct comprehensive HCWM assessment in the country and prepare detailed, budgeted action plan.	3 months	GAVI, Global fund, CanGive, A-CDC and others
Fund raising	PG will support fund raising with donors (and mapping potential funding window) to implement the action plan in countries that have waste management action plan integrated in national priorities and health strategies	Subjective	
Implementation	Primary role of UNICEF CO, HQ shall support the implementation of funded HCWM plans	Two to five years	

Serial number	Description of work	deliverables
1.	Conduct the HealthCare Waste Management (HCWM) assessment of the country using the WHO recommended methodology	HCWM assessment report with recommendations ² (collated by focal agencies), budgeted ³ phased action plan with timelines for implementation to fit into national health strategy with choice of technologies best fit for the country
2.	Provide detailed technical specifications of technologies proposed for county as part of budgeted plan	detailed technical specifications of hardware required procurement as part of action plan
3.	Provide detailed estimate of level of effort (LOE) needed for deployment of technologies	Detailed list of TA needs, on-site civil and electrical works needed as site readiness for commissioning of system
4.	Provide detailed budgeted plan of action for operation and maintenance of proposed solutions for a timeline of 10 years	Costed operational and maintenance plan of 10 years for proposed technologies
5.	Establish/ align the national committee for managing HCW in country for recommending/ endorsing all policy, technology choice, logistics decisions	Established committee on HCWM – first meeting conducted, meeting schedule prepared, minutes of meeting formally endorsed by government
6.	Conduct one session of sensitizing the national technical team (committee) on waste management plan and Training of Trainers at national level on managing HCW in country. This includes end user training of handling, storing, and transporting waste, using technology for disposing/treating the waste, operation and maintenance needs	One session of TOT conducted through a workshop, summary report on workshop with list of participants, agenda of program and training package submitted to UNICEF
7.	Debrief government and UNICEF offices in-country at the end of the mission with findings, solutions, plan of action provided in PowerPoint file.	Minutes and debriefing slides deck submitted to UNICEF

2. The findings from assessment, country specific action plan for HCWM shall be the sole property of UNICEF, service provider will have no intellectual rights over the information, data, findings and recommendation produced as part of this contract; Service provider cannot use this information for any other purposes. It is highly recommended to include this clause explicitly in the contract.

3. With approximate cost reference in international market and estimated deployment costs

5 Directly delivering Routine Immunization Vaccines (and other PHC commodities) for Equity (DRIVE) – Sustainable last mile delivery intervention

Global performance (which remained stagnant in the previous ten (10) years) has worsened with a dip in 2020 and 2021 (due to effect of the pandemic), in addition to varied performances not only between regions and countries but also within different parts of a country. Furthermore, according to WHO-UNICEF estimates, in 2021, about 25 million children missed vaccination, almost 4 million more than in 2019⁴; as disruptions associated with the COVID-19 pandemic eroded pre-pandemic immunization coverage gains⁵. This calls for accelerated efforts to support in-country systems to facilitate access to vaccines. As countries continue to position their immunization programmes to ensure no child is left behind, catalyzing last mile solutions to identify and target unreached and underserved populations with vaccines and other commodities will be critical.

Lack of vaccines availability at the last mile not only impacts service delivery but potentially has a negative effect on demand and can also play a significant role in broadening inequities, specifically affecting under-served, urban poor, insecure and hard-to-reach populations. UNICEF and WHO Joint Reporting Form (JRF) analysis indicate 46% of developing countries has witnessed service interruptions due to stock outs in 2019, an increase from 30% in 2014.

Effective supply chains especially last mile distribution interventions (including targeting unreached and underserved populations) are critical to ensuring vaccine availability and preventing stockouts. Analysis of 92 Effective Vaccine Management (EVM) Assessments⁶ conducted from 2009 to 2020 shows that countries scored the lowest in vaccine distribution (E7) criterion scores (E1 to E9) for both lowest distribution sites and service points, in addition to maintenance (E5) and information systems (E9).

4. UNICEF: COVID-19 pandemic sees 23 million children miss out on vaccines in 2020

5. Causey et al (2021), 'Estimating global and regional disruptions to routine childhood vaccine coverage during the COVID-19 pandemic in 2020: a modelling study'. Lancet. 398; 10299, 522-534

6. The Effective Vaccine Management

A. Overview

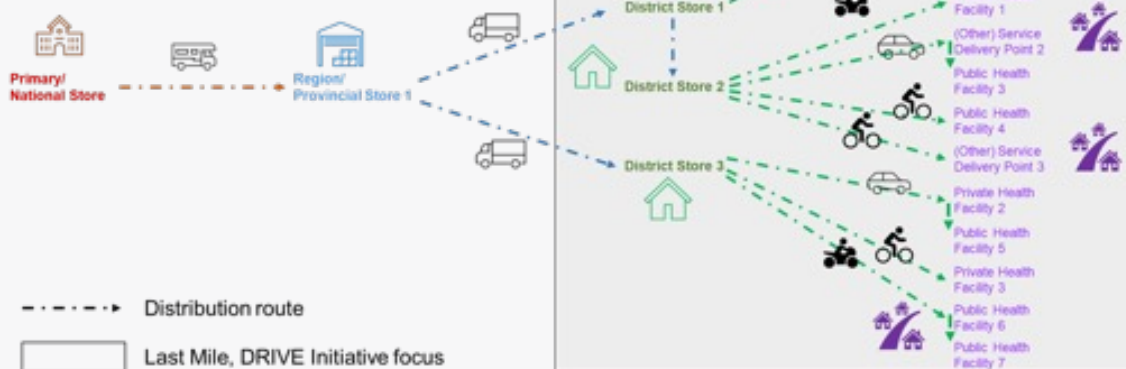
The DRIVE Initiative is designed to scale last mile supply chain direct delivery solutions in (parts of) countries with the most underserved and unreached populations. Taking the approach that the immunization programme is a critical entry point for neonatal, child, maternal health and other development interventions, the DRIVE initiative will provide a platform to implement context-dependent multi-sectoral approaches that will contribute to overall primary healthcare (PHC), universal health coverage (UHC), through prioritization and sustainable partnerships with young people, community organizations, appropriate non-health partners such as social and transport enterprises, private sector providers, 3PLs etc., aided by technology (such as blockchain enabled smart contracts).

B. Impact

Investments in last mile distribution efforts across countries will have supply chain (increased efficiency, increased vaccine availability and reduction in stock out, reduction in time spent on logistics by health workers, reduction in out-of-pocket expenses for logistics disincentive for health workers), health (contribution to higher immunization and other PHC commodities access and coverage, reduction of zero dose and underserved populations and reduced morbidity and mortalities) and economic (provision of jobs and contributions to local economy) impact.

THE DRIVE INITIATIVE.

Technology-enabled multi-stakeholder last mile direct delivery of public health commodities including HIV, TB, Malaria, Vaccines and others.



C. Approach

The initiative will implement on-demand distribution of health products through in-country stakeholders including young people and other last mile transporters (equipped with fit-for-purpose transport and storage assets) creating on-time and responsive last mile networks, assuring health products availability and access, while freeing up Health Care Workers' (HCW) time for service delivery.

D. DRIVE Initiative – Last Mile Delivery Activities

The DRIVE initiative will implement a complex set of intervention involving select number of core, companion and innovative activities (example below) and this can be adapted to country context and need.

Typical last mile distribution	DRIVE Initiative
Healthcare workers (HCWs) responsible for last mile distribution 	Young people and other stakeholders responsible for last mile distribution 
Pick up from district stores/uncoordinated distribution to HFs 	Delivered to health workers from district stores/supplying HFs by young people/others 
Default-prone hidden costs for health products distribution, often borne by HCWs 	Dedicated health products distribution financing, assuring availability, optimizing cost 
Potency risks laden multiple HCWs vaccine pick-ups and distribution 	Reduced vaccine handling and mitigated potency risks 
HCWs pick ups are missed stock management opportunities e.g., verifications. 	Leveraged opportunity for additional stock monitoring and management 
Limited or no multi-stakeholder leverage for health products management 	Leverage multiple stakeholders for health products management, increased ownership 

	Core Activities	Companion Activities	Innovative Activities
What?	Direct last mile delivery related	Reinforce implementation or performance of last mile delivery activities	New ways of implementing core and/or companion activities
Which?	• Direct vaccine delivery • Last mile route optimization • Integrated (vaccine + non-vaccine) last mile delivery • Change in frequency of vaccine delivery • Outsourced/hybrid vaccine delivery (leveraging local transport/distribution capacities)	• Strengthened sub-national forecasting, planning and (re) allocation • Workforce capacity building • Job aides to support knowledge transfer and action • Logistics Working Group Strengthening	• Multi-stakeholder engagement in product delivery • Use of adapted innovative business models

E. DRIVE Country Implementation

DRIVE will be implemented as a multi-year project from country set-up, planning, initiation and implementation:

Summary implementation

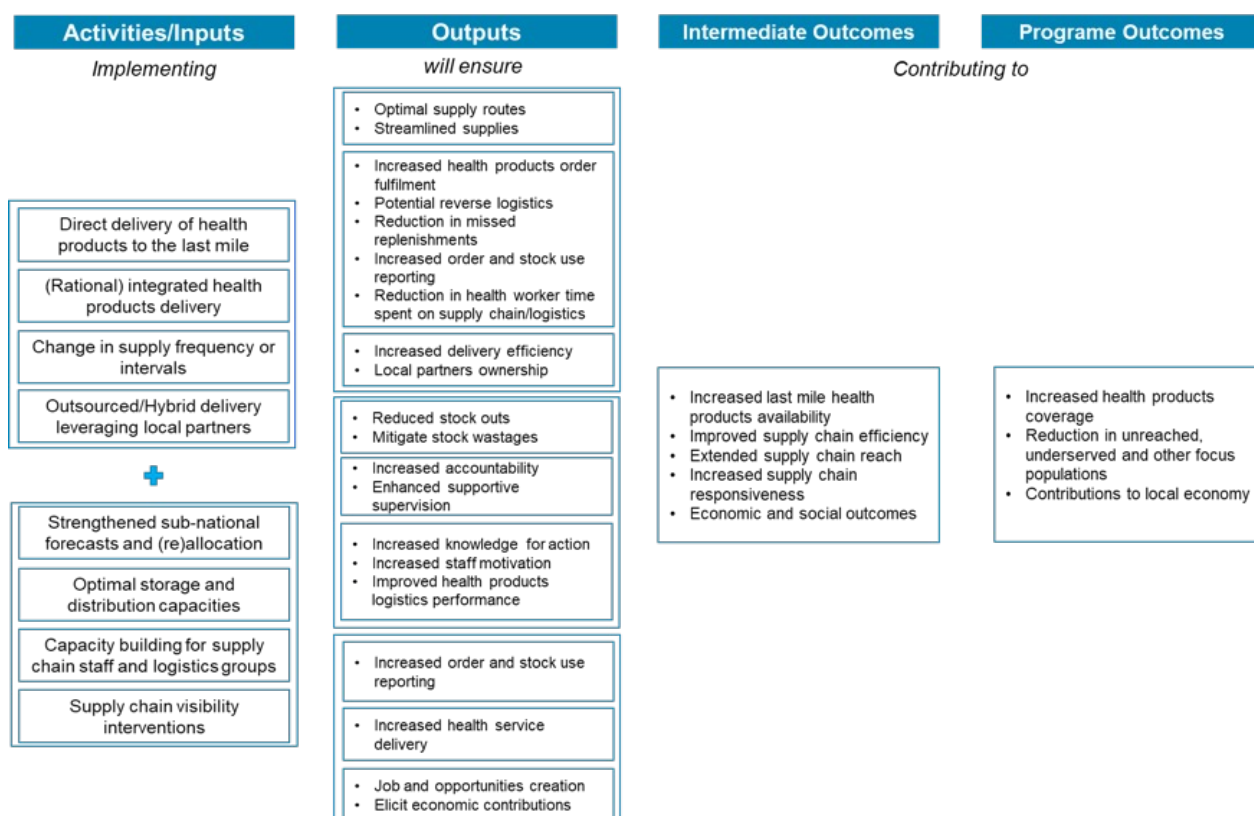


F. Multi-year implementation

Year	Year 1 to 2			Year 3 to 5
Period	1 - 2 months	3 - 9 months	10 - 24 months	Year 3 to 5
Stage	Project Launch	Initial Implementation	Wider Implementation	Implementation at Scale
Activities	- Finalizing country project plan, locations, timelines, stakeholder engagement, project scope per site etc. As part of project plan) make an engagement case for underserved and unreachable communities - Contractual processes e.g., engaging service providers - Recruitment (as appropriate) - Stakeholder engagement and enlisting e.g., young people, transport professionals etc. - Mapping of supply routes - Identification of comparison (non-project) sites, finalization of monitoring and evaluation plan and baseline data collection - Capacity building of supply chain staff - Production of capacity building materials	- DRIVE implementation in initial select locations, prioritizing underserved and unreachable communities - Project progress monitoring - Regular data collection - Mid-initial implementation (@6 months) pulse check - End of initial implementation evaluation (@9 months)	- DRIVE implementation in broader country setting (s), prioritizing additional underserved and unreachable communities - Project progress monitoring - Regular data collection - Mid-wider implementation (@18 months) pulse check involving mini-evaluation - End of wider implementation evaluation (@24 months) - Documentation of lessons learnt and further project implementation	- DRIVE implementation at scale in more country setting (s), prioritizing higher/newly identified underserved and unreachable communities - Use of implementation lessons from Years 1 and 2 to inform years 3 to 5 implementation - Project progress monitoring - Regular data collection - Each mid-year implementation pulse check involving mini-evaluation - Each end of year implementation evaluation - End of five-year evaluation - Documentation of lessons learnt and further project implementation

G. Demonstrating DRIVE impact

Implementing DRIVE initiative's last mile delivery interventions will contribute to supply chain, health and economic outcomes, which would be facilitated by a systematic theory of change. Appropriate baselining of indicators and judicious monitoring and evaluation will be critical to demonstrating the contributions and impact of DRIVE.



Principles

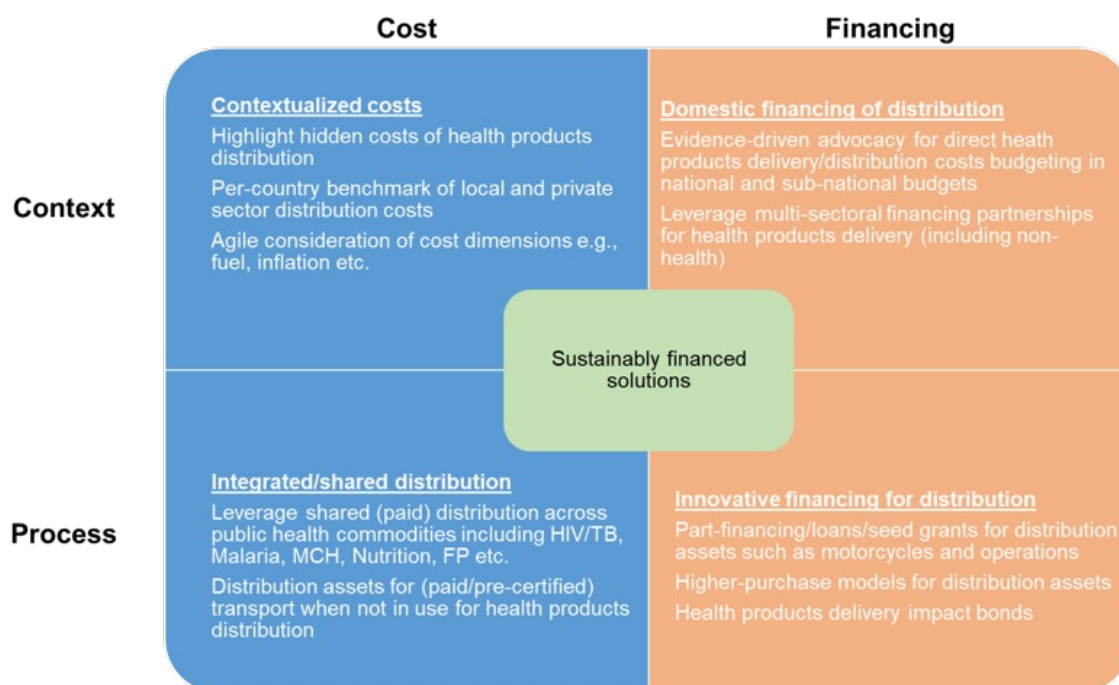
Evidence-based . Rapid Scale . Context and Country-owned . Complex interventions . Equity . Innovative . Partnerships

H. Financing DRIVE implementation

Building on lessons from previous last mile delivery interventions, DRIVE will be implemented with sustainability at the core through optimizing costs (such as consideration of local transportation costs- range from private to public sector and integrated delivery) and catalyzing innovative financing (such as through seed financing of last mile transport assets for last mile transporters including young people and vaccine delivery impact bonds).

I. Funding

Funding for DRIVE will depend on in-country implementation scope and scale and implementation budget can be developed in partnership with regional and headquarters colleagues. Headquarters can support countries with catalytic funding for pilot implementation and can provide technical assistance to develop inputs to scale-up funding as part of country grant applications including Gavi Full Portfolio Planning (FPP), Equity Accelerator Funding (EAF) etc.





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