

Smart Facilities for Health

Briefing deck

United Nations Development Programme BMS-ITM, BPPS-HHD & FSH/IICPSD-COVID-19 Private Sector Global Facility

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Agenda



Introduction to the Smart Facility concept



UNDP's track record of support to health systems



Deploying Smart Facilities for Health in support of COVID-19 vaccination

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Introduction to the Smart Facility concept

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Smart Facilities integrate 4 interdependent technology pillars into physical infrastructure



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"The whole is greater than the sum of its parts." - Aristotle

Smart Facilities are established and sustained through a recognized, best-in-class 7-step process





Continuously striving to promote energy efficiency across solar implementations and enhancing user behavior

Recognized best practice by UNDG for Solar implementation

7 STEP GREEN ENERGY SOLUTION

WHAT'S BEHIND OUR WORK?





Smart Facilities rely on a foundation of technical capacity-building of local SMEs that is central to the model's success





- Local SMEs are engaged in the Smart Facility process as soon as the project is deemed feasible (Step 3)
- Step 7 determines the longevity and ultimate impact of the Facility and is contingent upon the availability of local technical capacity
- There is a targeted capacity-building program for youth apprenticeship to build out the pipeline of local capacity

Smart Facilities have the potential to transform not just health systems but local economies as well

- The ability of locally-available expertise **extends the viability and sustainability** of the solution and preserves the value of the physical capital
- Local capacity transforms short-term vertical responses to acute crises to long-term solutions to buttress and extend health systems, reaching underserved communities well into the future
- Investment in local technical capacity lays the foundation for a new 4th Industrial Green Revolution
 - Trained local enterprises can shape green, new technologydriven sectors
 - Spillover effects can nudge local economies toward the SDGs
 - Rapid scaling of Smart Facilities will be **contingent upon successfully offering capacity building en masse**
 - The COVID-19 Private Sector Global Facility is working with strategic partner Microsoft to deploy SME-facing capacity-building (e.g., Smart Facility training) at scale

SMEs for Smart Facilities in Yemen









Scaling Smart Facilities goes hand-in-hand with scaling SME capacity



Partnering with developers and content delivery experts to migrate the existing training course from hybrid (digital + on-site) to <u>entirely</u> <u>digital</u> will allow for the scaling up of technical capacity and smart facilities



The COVID-19 Private Sector Global Facility develops innovative partnerships to advance SME resilience





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UNDP's track record of support to health systems

COVID-19 PRIVATE SECTOR GLOBAL FACILITY

COVID-19 vaccination actors

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Global Support and Coordination

COVAX

- Speeding up the development of safe and effective vaccines against COVID-19,
- Supporting the building of manufacturing capabilities, and
- Working with governments and manufacturers to ensure fair and equitable allocation of the vaccines for all countrie



- Procurement of vaccines
- Procurement of Cold Chain Equipment (CCE) as needed

National Level Architecture



- Information and advocacy
- Standards for equipment and medical use
- Training health workers



UNDP's COVID-19 Vaccination Support revolves around three key thematic areas focused on health systems:

- 1) Digital solutions for vaccine delivery
- 2) Data Futures Global Dashboard for vaccine equity
- 3) Greening COVID vaccination



(UNDP, UN Global Compact, ICC, DHL, Microsoft, PwC)

- Public-private partnerships
- Role of SMEs

National Logistics Working Group

 Mandate to improve immunization logistics and supply chain

COVAX Technical Working Group / COVAX National Coordinating Committee

- Have the responsible for developing and monitoring the key activities of vaccine distribution
 - Coordination and monitoring
 - Logistics structure / Transport
 - Cold chain
 - HR / Training





UNDP is taking a lead globally to support countries in the procurement of health products and to strengthen national supply chains in some of the most challenging operating environments in close collaboration with other partners. The expertise built through 15 years of supporting the PSM implementation of donor grants in such contexts is being used to support ongoing reforms in national procurement systems and to strengthen national supply chain systems. In collaboration with UNICEF, UNFPA, and GDF/UNOPS, UNDP's total volume of health procurement is \$310 million annually.



UNDP is one of the largest implementers of the Global Fund, working closely with governments and civil society organizations to implement projects for health. To date, the partnership has saved 3.1 million lives since its inception in 2003 and treated 880,000 cases of TB and 67 million cases of malaria. Currently, 2.2 million people are receiving HIV treatment through UNDP-managed programmes.



UNDP has successfully digitized vaccine stocks and storage temperatures across 10,500 vaccine cold chain points in 12 states of India. This has been coupled with capacity- building of more than 17,000 government staff, including vaccine storekeepers, data entry operators and cold chain managers through more than 550 sessions of training programmes using the eVIN application.



UNDP's Solar for Health initiative supports governments to increase access to quality health services through the installation of solar energy photovoltaic systems (PV), ensuring constant and cost-effective access to electricity, while reducing carbon emissions.

UNDP's Solar for Health (S4H) has existing infrastructure in partnership with the Global Fund



UNDP's Solar for Health initiative, installed in **652 facilities to date**, supports governments to **increase access to quality health services through the installation of solar energy** photovoltaic systems (PV), ensuring **constant and cost-effective access to electricity, while reducing carbon emissions**.

Countries		Total facilities	
>	Zimbabwe	405	
*	Nepal	145	
	Sudan	62	
Ť	Zambia	19	
*	Namibia	11	
*	South Sudan	10	
(*	Libya	5	
٢	Angola	1	

Case study 1: Health facility

Health facilities in rural areas of Zimbabwe installed with solar panels ensure the necessary source of energy to provide health services to local communities while reducing the electricity bills by up to 60%.



Case study 2: Effective warehousing

UNDP has supported the set up of so-called Medical Store Limited (MSL), to install 300 kWh solar energy systems in central medical warehouses in Zambia.

The warehouse guarantees the quality of vaccines and medicines.



UNDP's COVID-19 vaccine support offer: enhancing equity, resilience and sustainability of COVID-19 vaccination efforts







Deploying Smart Facilities for Health in support of COVID-19 vaccination

There are a number of UNDP LMIS and Smart Facility solutions that can support vaccine distribution efforts





1 https://www.devex.com/news/africa-cdc-outlines-ultracold-storage-strategy-for-covid-19-vaccines-98962 large building by Loren Klein; Van by fahmistudio from the Noun Project

Smart Facilities for Health (SFHs) are focused on providing essential solutions for fixed infrastructure throughout health systems



Discrete design elements (based on input from Global Facility Partner DHL)

Logistics and distribution systems-based elements							
Image: Contract of the system Image: Contrel the system		 A number of transport, logistics and multilateral entities are actively engaged in the mobile components of distribution <i>Out-of-scope:</i> For the time being, Smart Facilities for Health treat these elements as peripheral to 					
their core design which is focused on fixed infrastructure-based solutions							
Fixed infrastructure	elements – Smart Facilities plug-an	nd-play model					
3. Smart Facility solution for energy, Connectivity, IoT and Security	 Energy Power to support fixed CCE e.g., 220/240 V/3/50Hz (E001 for segments 1&2); 12-30V DC (E003 for segments 2&3) Energy to support diagnostics instruments (e.g., 200-240 VAC 50/60 Hz, 120w, single phase with ground, 20A peak current) IoT Comprehensive IoT solution for energy optimisation IoT Gateway with compatible protocol to support E006 sensors Non-TTSPP-related monitoring for healthcare delivery environments (e.g., air quality, pest control) IoT solutions for diagnostics inventory management Natural hazard response mechanisms where applicable (e.g., emergency protocols for floods, tropical cyclones) 	 Bandwidth requirements to enable active, realtime IoT solutions and integrated remote monitoring (e.g., integrated with eLMIS solution on a national dashboard across multiple sites) Bandwidth requirements to enable digitally-enabled health solutions (e.g., telemedicine at 50-100 Mbps) Bandwidth requirements to enable remote support for diagnostics hardware Comprehensive physical security components (e.g., CCTV, motion detection) Comprehensive cybersecurity solutions (e.g., data encryption) 	 Smart Facilities for Health provide the infrastructural support for: WHO PQS-standard devices and appliances across all health system segments – i.e., Higher levels of cold chain (Primary and Sub-national), Middle levels of cold chain (lowest delivery), Lower level of the cold chain (Service point): Fixed CCE (E001, E003) – e.g., cold rooms, walk-in freezers, refrigerators, freezers TTSPP monitoring and cold chain accessories (E006, E007) – e.g., active and passive temperature monitoring devices, voltage stabilisers Diagnostics hardware and software according to manufacturer requirements and CLIA standards for laboratories 	4. CCE and Stationary Condition Monitoring Image: Condition Unicef (*) 5. Diagnostics hardware and software solutions Image: Condition Condition Monitoring 6. Diagnostics hardware and software solutions Image: Condition Condition Monitoring			

Smart Facilities compared to the prevailing standard of care



	Relevance to COVID-19 vaccination support	Current state(s)	Smart Facility solutions
Energy	 Providing electricity to CCE (cold chain equipment) Providing electricity to monitoring and vaccine intelligence solutions (e.g., eLMIS) 	 No access to reliable electric grid, requiring costly standalone CCE (e.g., solar-powered refrigeration appliances) No access to green energy 	 Total green energy independence Robust tracking of generation and consumption dynamics (i.e., using IoT sensors) to ensure viability Supported by local technical capacity (i.e. SMEs) to ensure reliability and sustainability Potential additional support: mobile energy solutions (e.g., electric vehicles, vehicle-to-grid integration)
СТ	 Enables automated collection (e.g., to the cloud) of critical data Enables LMIS and vaccine intelligence solutions to be integrated and monitored remotely 	 Lack of connectivity at multiple health system nodes limits visibility into critical dynamics and failure points If LMIS solutions are in place, they are disperse and management is decentralized 	 Built-in connectivity (via terrestrial networks or satellite where necessary) Potential additional support: mobile ICT solutions (e.g., mobile IoT gateway)
T Sensors	 Enables automated, remote, centralized monitoring of critical parameters (e.g., energy generation and consumption) 	 No tracking of parameters, increasing volatility of the system If critical parameters are tracked, it is passive and must be directly manually monitored (e.g., cold chain manager retrieves and observes temperature probes and records the data manually) 	 Sensors are applied to track a variety of conditions relevant for stable infrastructure management Potential additional support: vaccine and cold chain integrity support (e.g., humidity, temperature, CCE status) at stationary points (e.g., medical warehouses, points of use); redundant IoT data that is broadcast to enable proactive management (e.g., mobile GPS, temperature data)
Security	Protection of critical dataSecurity of physical premises	Weak or absent cybersecurityWeak or absent monitoring of premises	 Comprehensive cybersecurity solutions to protect the integrity of data collection Potential additional support: physical security solutions
	All elements have been field-tested s across 18 sites; the integrated system as a plug-and-play solution to ena stationary condition monitoring	ince 2016 and are currently operational m is in the process of being field-tested able digital solutions for health (e.g., g for COVID vaccination support)	(e.g., identity & access, solar street lamps, CCTV cameras)