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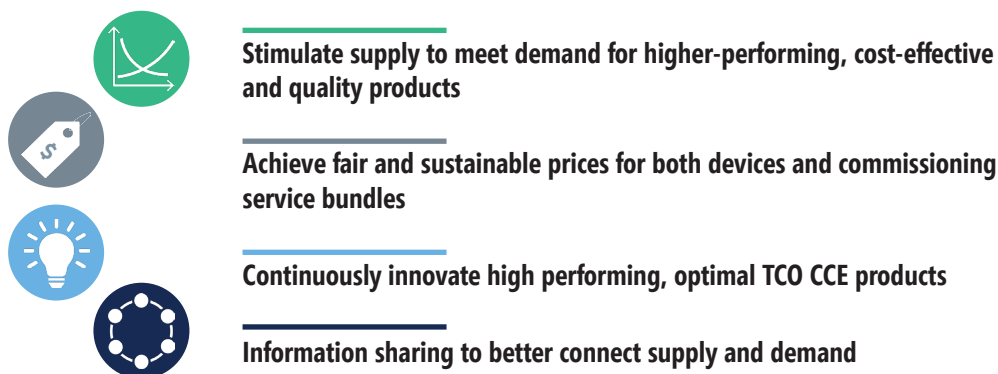
CCEOP MARKET SHAPING EVALUATION

The Gavi Cold Chain Equipment Optimization Platform (CCEOP) was established in 2015 in recognition that functional cold chain equipment (CCE) is a critical precondition to strengthening vaccine supply chains and ultimately to achieving the Alliance's immunization equity and coverage goals, yet was a gap for many countries. Through CCEOP, the Alliance has pledged \$250 million dollars over five years to support 57 countries to upgrade and expand their CCE footprint. In support of this, Gavi launched a CCEOP market shaping strategy to stimulate the market for optimal CCE while generating the demand in Gavi-supported countries to rapidly replace obsolete cold chain equipment and expand immunization services.

JSI Research & Training Institute, Inc. (JSI) has been commissioned by Gavi to conduct an evaluation of CCEOP implementation, including a focus on global level CCE market shaping activities and results from 2018 through 2020. This market shaping brief reflects a point in time analysis of the initial trajectory based on the objectives set out in Gavi's Procurement and Supply Roadmap for ice-lined refrigerators (ILR) & solar direct drive (SDD) Cold Chain Equipment in 2016. It reflects the evaluation's findings through mid-2019. The next update will follow this and reflect outcomes associated with the revised strategy outlined in the Procurement and Supply Roadmap for ILR & SDD Cold Chain Equipment that was finalized in June 2019.

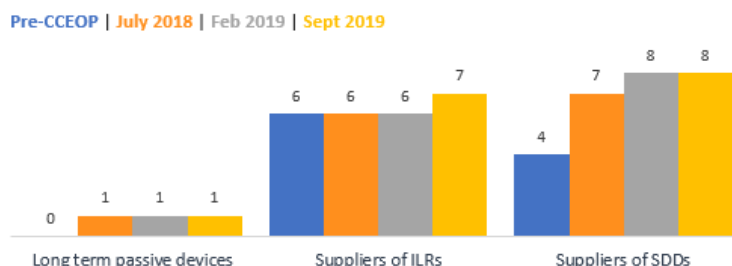
SUMMARY OF PRELIMINARY MARKET SHAPING FINDINGS

The global market shaping goal is to incentivize a market where CCE is available at an optimal total cost of ownership (TCO) and ultimately, to create a market where high performing equipment and services are available from a solid supplier base at sustainable prices. This is supported by four strategic objectives from the 2016 Procurement and Supply Roadmap:



INCREASE IN CCE SUPPLY AND PRODUCT INNOVATION

CCEOP has significantly increased attention to the CCE market - generating high levels of awareness of and demand for better technology from countries and rapid market response from CCE suppliers. Prior to CCEOP approval in 2015, there were six manufacturers of ILRs, now there are eight with platform eligible CCE. For SDDs, there were four suppliers, now there are seven manufacturing platform-eligible equipment. Both categories of CCE have seen sharp increases in available models in all size segments. Prior to CCEOP's launch in 2016 there were 36 devices that would have been platform eligible for both solar-driven and on-grid refrigerators and freezers, now there are over 74 platform eligible models of ILR and SDD. The first set of desired equipment innovations for future platform eligibility was incorporated into devices on the market well before the 2019 target and suppliers continue to expand their product offerings in line with enhanced performance.



SLOWER PROGRESS ON PRICE REDUCTION TARGETS

Despite early achievements on product innovation and availability, progress towards price reduction targets has been less rapid. While average CCE prices have decreased slightly for some segments, decreases have not been consistent across all suppliers or segments. This reveals a tension in the strategy between the expectation for innovation alongside price reductions; if suppliers are investing in performance it may not be reasonable to expect immediate price reductions, especially until procurements reach higher volumes. Additionally, in many cases countries are selecting higher priced products even when less expensive options are available. This may be due to the availability of specific characteristics, but it also reflects difficulty in accurately comparing device options with different characteristics as well as some lack of price sensitivity on the part of countries.

BARRIERS TO ENTRY FOR NEW SUPPLIERS

Procurement outcomes from the first 2.5 years of CCEOP also revealed barriers to entry for newer suppliers who are trying to gain a foothold in a market that prior to CCEOP has historically been dominated by two manufacturers. While new entrants' prices may be set to drive competition, country preferences are frequently based on criteria other than price, including brand awareness and the installed base of equipment already in a country. This is further complicated by the service bundle provider (SBP) component that as originally implemented, required suppliers to have a network of local partners for delivery, installation, and service. This model favors more established suppliers and may mean that less experienced suppliers are making large assumptions in their budgets, potentially inflating service bundle costs to account for uncertainty and risk.

IMPROVED INFORMATION FLOW AND TRANSPARENCY

Information flow and transparency among partners, countries and manufacturers have made progress under CCEOP. Gavi, UNICEF (Supply and Programme Division), and WHO have all been cited by stakeholders for their efforts to coordinate and improve information sharing between themselves, countries, suppliers, and service bundle providers. UNICEF-led industry consultations to engage CCE suppliers and keep them up to date on program changes and efforts on price transparency have improved data accessibility.

One of the major market weaknesses that CCEOP was meant to address through improved information flow was the mismatch of supply and demand based on weak forecasts, unpredictable demand, and fragmented funding. The certainty of funding and better forecasts were meant therefore to provide suppliers with the assurance needed to invest in and produce better technology. During key informant interviews the evaluation team conducted with suppliers in Q3 2018, the suppliers uniformly praised the initial efforts by Gavi and UNICEF Supply Division in creating and sharing demand forecasts with industry. The forecasts shared at the beginning of CCEOP generated interest and excitement and helped guide production planning, resource allocation, and investments. However, as procurement through mid-2019 has not kept pace with the short-term demand forecasts, suppliers also voiced concern that the numbers lack credibility, and this was affecting their on-going business decisions.

Suppliers also mentioned the CCEOP Technology Guide as an important resource for their internal planning and understanding what was in the product pipelines. Several suppliers suggested they used this in conjunction with the forecasts to better understand what other suppliers are doing

and using this information to assess market opportunities.

COURSE CORRECTION WITH A FOCUS ON GOALS FOR A HEALTHY MARKET IN THE LONG TERM

Market shaping activities typically take several years, if not longer, to fully understand the effects on the market. For an undertaking of the size and scope of CCEOP, it is expected that early experience and learning will lead to course correction and programmatic adjustments. The challenges with the market shaping strategy seen as of mid-2019 seem to be well understood by many stakeholders, and already changes have been made to the country application process and UNICEF tendering process, which should positively affect future market outcomes. Further, the update to the Supply and Procurement Roadmap for CCE from Gavi is poised to address many of the initial limitations and challenges reflected in this summary. That said, questions remain on what the "right" number of CCE manufacturers is in this market – two is generally regarded as too few, but eight may be too many. It will be important to watch trends in this area to see if the number of suppliers in this space expands or contracts and if there is some optimal equilibrium which Gavi and others should be working to maintain.

Over the three-year period, JSI will be following the progress of the CCEOP market shaping strategy and updating insights based on ever-changing market dynamics. This preliminary assessment indicates that while adjustments are warranted, the approach is sound and appears to be on track towards the overall goals.