SUBJECT:	**CONSENT AGENDA: REVIEW OF COLD CHAIN EQUIPMENT OPTIMISATION PLATFORM**
Agenda item:	02f
Category:	For Decision

Section A: Introduction

- In June 2015 the Gavi Board approved the creation of the cold chain equipment optimisation platform (CCEOP) with an initial amount of US$ 50 million to launch its implementation and fund the first applications. The CCEOP was launched in 2016 and 24 countries submitted applications between January 2016 and March 2017. This is ~20% higher than the number of applications that had been projected in 2015 and likely reflects pent-up demand from previous underinvestment in cold chain equipment (CCE). Recognising the high level of country demand, the Board agreed in December 2016 to expand its investment in the CCEOP, while also requesting that "the total multi-year commitments of grants for the CCEOP should not exceed US$ 250 million in the period up to the Board meeting in June 2017". The Board also requested that the Secretariat develop strategies for the equitable allocation of CCEOP funding.

- This report asks that the Board approve the proposed approach for the equitable allocation of existing CCEOP resources to countries, as described in Section 2.2. This approach was recommended by the Programme and Policy Committee (PPC). It also provides an update on the initial implementation of the CCEOP and lessons learned to date.

Section B: Review of Cold Chain Equipment Optimisation Platform

1. Purpose of the CCEOP

1.1 The CCEOP is a catalytic investment that helps countries to modernise and extend the cold chain with reliable and high-performing equipment at an accelerated pace. As discussed in the June 2015 and December 2016 Reports to the Board, the CCEOP:

(a) Safeguards the potency of vaccine stocks, thereby mitigating risks to the ~US$ 1 billion investment in vaccines that the Alliance makes each year[1].

[1] A refrigerator supported by the CCEOP can have a lifetime cost of between US$ 4,000 and US$ 10,000 and it could be storing on the order of US$ 180,000 worth of vaccines over its lifetime.

(b) Prioritises investments which contribute to improved coverage and equity, such as replacing non-functioning equipment in busy health facilities and extending the reach of immunisation to facilities without CCE previously[2].

(c) Shapes the CCE market to catalyse the development of new devices that better meet countries' needs, have substantially lower maintenance requirements and a smaller environmental footprint. Market shaping also helps to achieve fair and sustainable prices over time for both devices and the "service bundle" (an innovative mechanism whereby manufacturers are accountable for delivery and installation of equipment, as well as training local technicians on maintenance).

(d) Incentivises countries to anticipate maintenance requirements in a systematic way and to ensure they are met.

(e) Contributes to ensuring the sustainability of programmes by supporting countries to use more reliable and efficient equipment, which has overall lower recurrent and lifetime ownership costs.

1.2 The CCEOP is a core part of the implementation of the Alliance's Supply Chain Strategy, which was originally approved by the Board in 2014. The Alliance works with countries to ensure CCEOP support is integrated with broader efforts to strengthen their supply chains and with Gavi's other forms of support.

1.3 The CCEOP includes a joint investment mechanism through which Gavi pays eligible countries a "subsidy" of up to 50% or 80% depending on their GNI. Countries contribute the remaining portion of the joint investment from either domestic or other donor sources or, if necessary, Gavi health system strengthening (HSS) funds.

2. Approach for equitable allocation of CCEOP resources

2.1 An updated demand forecast for the 55 CCEOP countries was presented to the PPC in May 2017 based on applications received to date. It predicts that country demand for refrigerators could be ~ 20% to 40% higher than originally forecast in 2015[3], and is projected to exceed the Board-approved envelope of US$ 250 million by the end of 2018 (for grants of up to five years). It is therefore necessary to develop an approach to equitably allocate the available support, which will create a ceiling on the level of support available to each country (for some countries, this ceiling will be below their total level of demand).

[2] Appendix 1 to the PPC May 2017 Report (Doc 07) includes detailed country plans.
[3] The 2015 estimate was extrapolated from a limited number of countries with data available at the time. The latest forecast is ~150-170,000 units will be required over five years compared to ~125,000 forecast in 2015. More details are available in the May 2017 Report to the PPC (Doc. 07).

2.2 The PPC considered two approaches to ensure an equitable allocation of the US$ 250 million. It recommended the Board approve the use of the existing formula for allocating health system strengthening (HSS) support[4]. Annex A shows the allocation amounts for all eligible countries under this formula. The primary benefit of this formula is simplicity and consistency with the existing means of allocating resources to countries. The primary limitation is that it does not explicitly factor in elements that may impact CCE funding requirements (such as the number of health facilities in a country or status of electrification[5]). However, when such variables were applied under an alternative formula the resulting allocation did not notably better target CCEOP support to countries with the greatest coverage and equity bottlenecks. For 43 of the 55 countries the allocation results of the two formulas differ by no more than US$ 1 million and the median change in amounts is only 12%.

2.3 In cases where the ceiling calculated under the formula is below the level of support needed by countries, the Alliance will help those countries to prioritise their requests and consider alternative sources of funds. The total financial need of countries may also decrease due to potential future reductions in the cost of CCE devices and of the service bundle. The Secretariat will continue to monitor these trends and will update the PPC accordingly.

3. Update on CCEOP implementation progress

Progress to date

3.1 Applications from 18 countries have been approved or recommended for approval for support worth a total of US$ 145 million over five years (firm commitments have only been made for 2017 and 2018 to ensure that support remains below the Board-approved threshold of US$ 250 million).

(a) Eight countries [6] have been approved for support totalling US$ 63 million over five years (US$ 41 million committed for 2017-2018).

(b) 10 countries [7] have been recommended for approval by the Independent Review Committee (IRC) or through the Country Engagement Framework (CEF) process, with applications totalling US$ 82 million over five years (US$ 61 million for 2017-2018).

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[4] The Board-approved HSS formula calculates a ceiling level of CCEOP support based on three parameters of equal weighting: live births ('population in need'), number of under-immunised children ('equity'), and Gross National Income (GNI) per capita ('ability to pay'). Following the logic of the HSS formula the CCEOP places a cap of ~US$ 23 million for larger countries and a floor of US$ 693,000 for smaller countries.

[5] Electrification status reflects the proportion of facilities that are on the electric grid and can support devices, versus those that are not and instead require more expensive off-grid devices.

[6] Haiti, Democratic Republic of Congo, Uganda, Kenya, South Sudan, Madagascar, Niger, Cameroon.

[7] Pakistan, Uzbekistan, Guinea, Liberia, Malawi, Togo, Sierra Leone, Djibouti, Kyrgyzstan, Vietnam.

3.2 The CCEOP joint investment mechanism is successfully leveraging funding from domestic or other resources. Approximately 40% of the value of all country joint investment proposals to date are funds from non-Gavi sources, including Vietnam which contributed its entire joint investment from government funds. When countries leverage HSS funds for their joint investment portion (approximately 60% of country joint investment to date), they are typically using funds that were previously targeted for cold chain investments and therefore not putting other health system strengthening priorities at risk. The PPC underscored the importance of ensuring complementarities between a country's CCEOP objectives and those of its ongoing HSS grant(s), in anticipation of more complete integration.

3.3 The PPC also noted the linkages between the CCEOP, Gavi-supported technical assistance under the Partners' Engagement Framework (PEF) and the Joint Appraisal process. Technical assistance strengthens and accelerates the application and implementation process by supporting countries to better target CCE towards areas where the cold chain is a bottleneck to coverage and equity improvements. For example, Pakistan's application prioritised the equipping of health facilities that have cold chain gaps in 65 districts (including the 11 polio tier 1 reservoir districts) and are also a focus for Gavi's wider support. These districts represent a birth cohort of three million and include one million under-immunised children. The CCEOP leverages the Joint Appraisal process in Pakistan and elsewhere to ensure that appropriate and adequate technical assistance is anticipated for each country.

3.4 There has been substantial progress on market shaping, noted by the PPC, with results on track relative to the CCE supply and procurement 'Roadmap'. Manufacturers have rapidly increased their portfolio of better performing technologies, responding to strong and more transparent country demand. End-of-2017 targets for the number of ILR[8] devices that meet the technical criteria for CCEOP eligibility[9] have already been exceeded at 26, and SDD[10] targets are currently on track at 25. For both ILR's and SDD's the number of devices now available far exceeds the number that would have been available in the absence of the CCEOP.

3.5 The Alliance will seek to increase and further accelerate the number of manufacturers and CCEOP-eligible devices available to countries. This is important to ensure countries have sufficient CCE choices to meet their needs and to ensure adequate competition. To encourage countries to consider the full range of available suppliers, the Alliance now requests that they indicate a first, second and third preference of product choices, with support being provided to countries to consider switching brands. The service bundle roll-out will be monitored to understand how manufacturers

[8] Ice-lined refrigerators/freezers (on-grid equipment)
[9] 'CCEOP-eligible' equipment must comply with target product profiles (TPPs) that reflect the needs of Gavi-eligible countries. TPPs build on WHO PQS equipment requirements. Examples include 'Grade A' user-independent freeze protection and extended ambient temperatures of operation.
[10] Solar Direct Drive refrigerators/freezers (off-grid equipment)

implement it, implications for in-country businesses and capacities, and broader lessons learned.

Key challenges and lessons learned

3.6 The PPC noted with concern that the period between countries' applications for CCEOP support and the final installation of equipment has been longer than anticipated, and that no equipment has yet been installed in countries. Alliance partners are working to accelerate timelines based on lessons learned to date and there has been some progress. For the first countries that applied, the period between their application and the arrival of equipment in-country is projected to be approximately 18 months (with the first CCEOP-supported equipment projected to be installed in Haiti by Q3 2017). This timeline is expected to be reduced by one third, to under 12 months, by: accelerating key processes; moving to parallel implementation of previously sequential steps[11]; and helping countries to strengthen capacity and accelerate implementation through PEF/TCA support (Section 3.3). The PPC requested that additional solutions be developed to further accelerate implementation, without compromising the quality of deployment planning and execution. It also requested that timelines be closely monitored going forward.

3.7 Service bundles are an innovative means to address systemic risks such as installation delays, damage to CCE prior to commissioning and improper installation leading to rapid equipment failure. However this is a new approach, often requiring manufacturers to partner with local service providers in-country. As a result there have been some delays in obtaining accurate costing and in the efficient coordination of local service delivery solutions. This has also contributed to slower equipment deployment. Whilst no CCEOP-procured equipment has yet been deployed, there are early suggestions that the operationalisation of the service bundle will be successful. An HSS-funded CCEOP-like programme in DRC in 2016-2017 installed 2,500 refrigerators over 10 months using a service bundle approach. Importantly, the CCEOP service bundle design was modelled after the experience in DRC. A rapid assessment of the DRC service bundle implementation (amongst other elements of the HSS grant implementation) was conducted in Q1 2017[12]. It yielded largely positive indications in terms of efficient and timely installation of equipment, cost objectives and equipment maintenance and performance.

4. Looking Forward

4.1 The PPC requested that they continue to receive updates on CCEOP implementation as part of the regular Country Programmes update. These will be informed by ongoing monitoring and an independent evaluation in 2018-2019 which will be overseen by the Evaluation Advisory Committee (EAC). PPC members highlighted the need for the evaluation to include analysis of CCEOP value for money, looking at elements such as the cost

[11] Appendix 1 of the May 2017 Report to the PPC (Doc. 07) provides detailed discussion.
[12] Appendix 2 of the May 2017 Report to the PPC (Doc. 07) provides the full assessment report.

of the service bundle and transactional costs for the Alliance, countries and manufacturers. The PPC requested that the implementation of the service bundle be particularly closely monitored and evaluated.

4.2 In addition to regular updates to the PPC, it is anticipated that the Board will be requested to review the ongoing implementation of the CCEOP in due course, including findings from the evaluation and to decide whether to extend its dedicated support for CCE. The PPC noted that full integration of the CCEOP within HSIS support processes is anticipated to be feasible from 2019 (the CCEOP is already integrated into the CEF process). It was also noted that the implications of integration for areas such as market-shaping will need to be closely monitored. This integration is consistent with the Board's 2016 HSIS policy.

5. Financial implications

No additional financial implications. Maintain the US$ 250 million ceiling.

Section C: Actions required of the Board

The Gavi Alliance Programme and Policy Committee recommends to the Gavi Alliance Board that it:

a) **Approve** the approach to equitable allocation of available CCEOP funding based on the HSS formula as described in Section 2.2 of Doc. 12.

b) **Request** the Secretariat to continue documenting lessons to provide regular updates on the progress of the CCEOP to the Programme and Policy Committee.

Annexes

Annex A: Equitable allocation amounts (all countries)

A full discussion is provided in Appendix 4 of the Report to the Gavi Alliance Programme and Policy Committee: *Review of the Cold Chain Equipment Optimisation Platform, May 2017 (Doc. 07)*.

Figure A1: HSS allocation formula outcomes, comparison by country

(Overleaf)

HSS Formula: Allocation by Country						
Country	CCEOP Gavi Joint (%)	Allocation Results			CCEOP Gavi Investment Recommended to Date (US$ millions)	Diff. to CCEOP Recommendation to date (US$ millions)
		Country Allocation (%)	Country Allocation (US$ millions)	Country Allocation Ranking		
Nigeria	50%	9.2%	**23.1**	1	N/A	N/A
Pakistan	50%	9.2%	**23.1**	1	25.0	(1.9)
DR Congo	80%	9.0%	**22.4**	3	39.4	(17.0)
Ethiopia	80%	7.9%	**19.6**	4	N/A	N/A
Bangladesh	50%	4.9%	**12.2**	5	N/A	N/A
Uganda	80%	4.4%	**10.9**	6	8.2	2.7
Tanzania	80%	3.6%	**8.9**	7	N/A	N/A
Niger	80%	3.2%	**8.1**	8	6.4	1.7
Mozambique	80%	2.8%	**7.0**	9	N/A	N/A
Afghanistan	80%	2.8%	**6.9**	10	N/A	N/A
Madagascar	80%	2.6%	**6.6**	11	9.2	(2.6)
Kenya	50%	2.4%	**6.1**	12	6.7	(0.6)
Mali	80%	2.1%	**5.3**	13	N/A	N/A
Myanmar	50%	2.1%	**5.2**	14	N/A	N/A
Somalia	80%	1.8%	**4.5**	15	N/A	N/A
Malawi	80%	1.8%	**4.5**	16	4.5	0.0
Chad	80%	1.8%	**4.5**	17	N/A	N/A
Yemen	50%	1.7%	**4.3**	18	N/A	N/A
Guinea	80%	1.7%	**4.2**	19	12.3	(8.1)
South Sudan	80%	1.6%	**4.1**	20	7.6	(3.5)
Burkina Faso	80%	1.5%	**3.8**	21	N/A	N/A
Cameroon	50%	1.3%	**3.2**	22	5.7	(2.4)
Viet Nam	50%	1.3%	**3.1**	23	1.6	1.5
Burundi	80%	1.2%	**3.1**	24	N/A	N/A
Sudan	50%	1.2%	**3.1**	25	N/A	N/A
Nepal	80%	1.2%	**3.0**	26	N/A	N/A
Côte d'Ivoire	50%	1.2%	**2.9**	27	N/A	N/A
Zimbabwe	80%	1.1%	**2.8**	28	N/A	N/A
Senegal	50%	1.0%	**2.5**	29	N/A	N/A
Ghana	50%	1.0%	**2.4**	30	N/A	N/A
Benin	80%	0.9%	**2.3**	31	N/A	N/A
Korea DPR	80%	0.8%	**2.0**	32	N/A	N/A
Haiti	80%	0.8%	**1.9**	33	5.9	(3.9)
Rwanda	80%	0.7%	**1.8**	34	N/A	N/A
Cambodia	80%	0.7%	**1.6**	35	N/A	N/A
Zambia	50%	0.7%	**1.6**	36	N/A	N/A
CAR	80%	0.6%	**1.6**	37	N/A	N/A
Togo	80%	0.6%	**1.5**	38	3.2	(1.7)
Liberia	80%	0.6%	**1.5**	39	1.9	(0.5)
Sierra Leone	80%	0.5%	**1.3**	40	3.7	(2.4)
Uzbekistan	50%	0.5%	**1.2**	41	2.5	(1.3)
Papua New Guinea	50%	0.4%	**1.0**	42	N/A	N/A
Eritrea	80%	0.4%	**1.0**	43	N/A	N/A
Tajikistan	50%	0.4%	**0.9**	44	N/A	N/A
Comoros	80%	0.3%	**0.7**	45	N/A	N/A
Djibouti	80%	0.3%	**0.7**	45	0.3	0.4
Gambia	80%	0.3%	**0.7**	45	N/A	N/A
Guinea-Bissau	80%	0.3%	**0.7**	45	N/A	N/A
Kyrgyzstan	50%	0.3%	**0.7**	45	0.8	(0.1)
Lao PDR	50%	0.3%	**0.7**	45	N/A	N/A
Lesotho	50%	0.3%	**0.7**	45	N/A	N/A
Mauritania	50%	0.3%	**0.7**	45	N/A	N/A
Nicaragua	50%	0.3%	**0.7**	45	N/A	N/A
Sao Tome & Principe	50%	0.3%	**0.7**	45	N/A	N/A
Solomon Islands	50%	0.3%	**0.7**	45	N/A	N/A
Total		**100%**	**250.0**		**144.9 (18 countries)**	**(39.8) (18 countries)**

Additional information available on BoardEffect in May 2017 PPC meeting book

Report to the Gavi Alliance Programme and Policy Committee: Review of the Cold Chain Equipment Optimisation Platform, May 2017 (Doc. 07).

Appendices of the *Report to the Gavi Alliance Programme and Policy Committee: Review of the Cold Chain Equipment Optimisation Platform, May 2017 (Doc. 07):*

Appendix 1: Country implementation updates

Appendix 2: Rapid impact assessment DRC service bundle

Appendix 3: 2017 demand forecast

Appendix 4: Equitable allocation approach

Appendix 5: Supply Chain Strategic Focus Area update of the February 2017 Partners Engagement Framework (PEF) MT

Appendix 6: Mapping of supply chain interventions in the pharmaceutical sector in DRC, 2017, World Bank (Document in French)