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Finding the sweet spot: identifying affordable quality solar products for the last mile

Webinar – 10th September 2020

**Practical
ACTION**

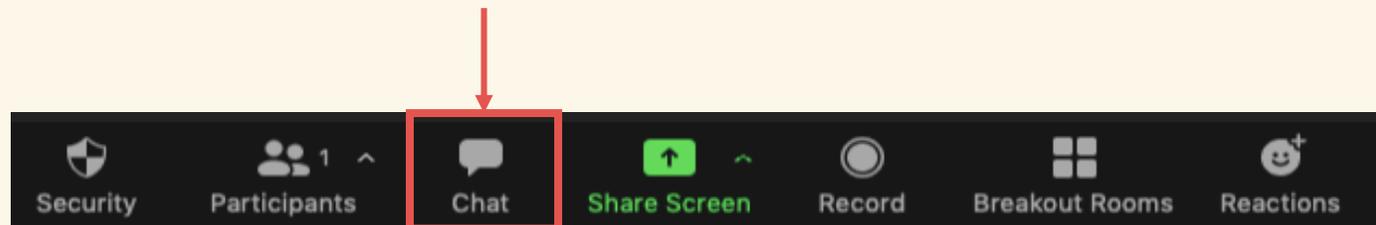
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The GDC is hosted by Practical Action, alongside implementing partners Hystra and BoP Innovation Center.

Agenda

- Introduction (5 minutes)
- Presentation of key findings (20 minutes)
- Panel discussion (20 minutes)
- Open Q&A (10 minutes)



Our panellists



Chris Carlsen,
Technical and
Policy Expert



Natalie Balck,
Head of Projects and
Partnerships



Ogwal Joseph,
Founder and CEO



Drew Corbyn,
Head of Performance
and Investment

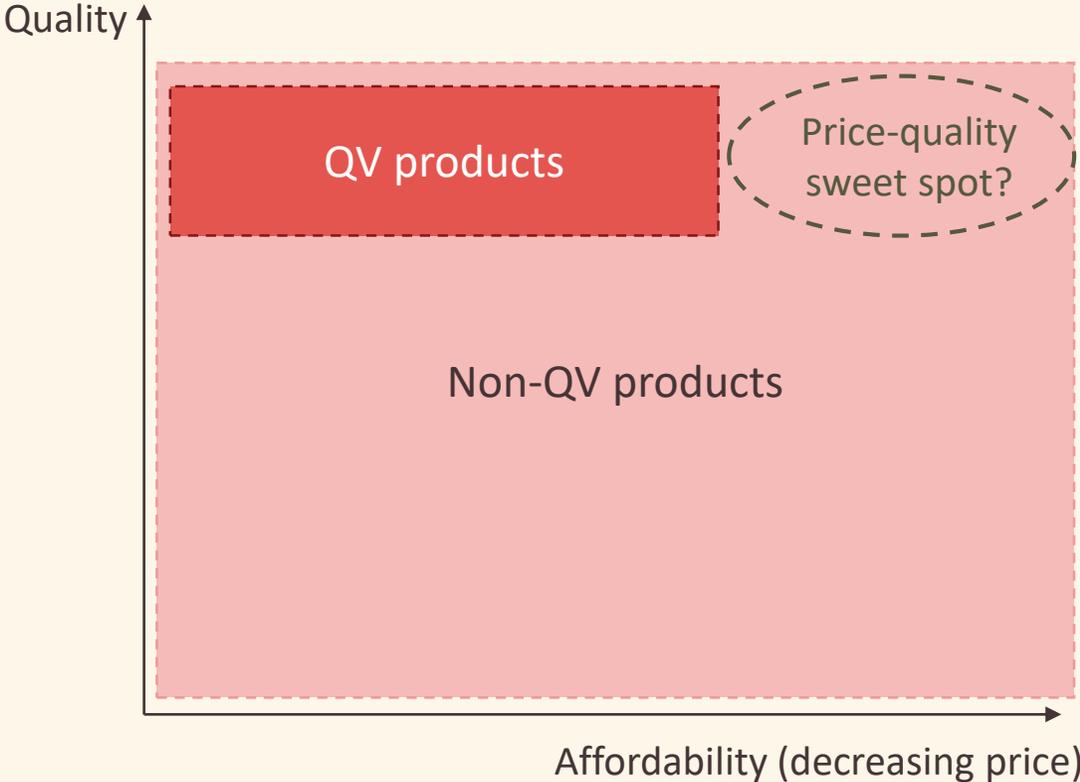


Presentation of key findings



Last mile distributors (LMDs) struggle to identify high quality, affordable off-grid solar (OGS) products at the last mile

LMDs' choice between QV vs non-QV products in terms of quality and affordability*



*Not representative of the market split of QV and non-QV products; merely intended as an illustration of one of LMDs' procurement challenges

This report's objective is to help LMDs tackle this challenge, specifically by providing insights on two key questions

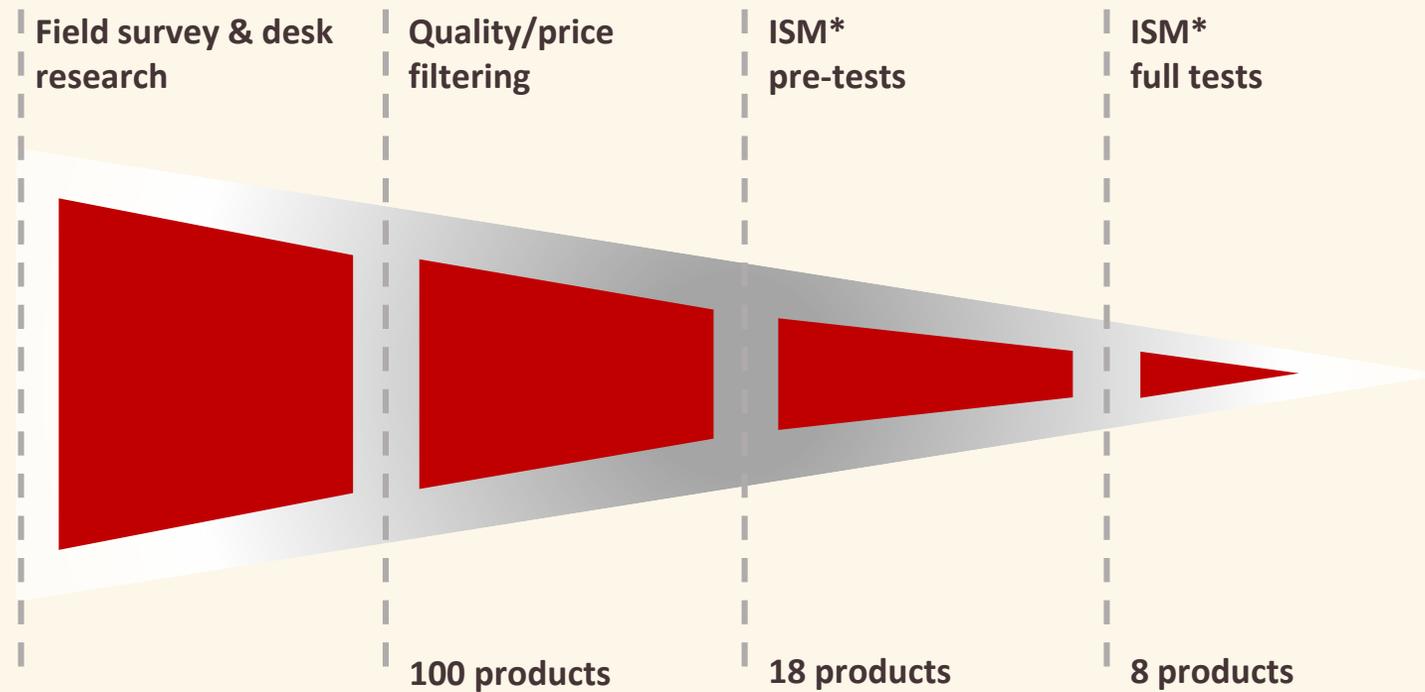
1. Are there products in the market today that are both quality* and affordable** at the last mile, i.e. products in the price-quality sweet spot?
2. How could these be identified?

*Meeting Lighting Global Quality Standards

** I.e. that can be sold on cash to end-users at 25-50 per cent cheaper price-points than leading QV products in the market with similar specifications (e.g. battery size, panel size, number of light points, etc.), and a valid two-year warranty.

To do this, we followed a funnelled process to identify and test best-selling non-QV products in the Kenyan market

Funnelled product identification and testing process



* Scope of products limited to 'pico products' (<10Wp panels) sold on cash

**Initial Screening Method (ISM), conducted in partnership with VeraSol

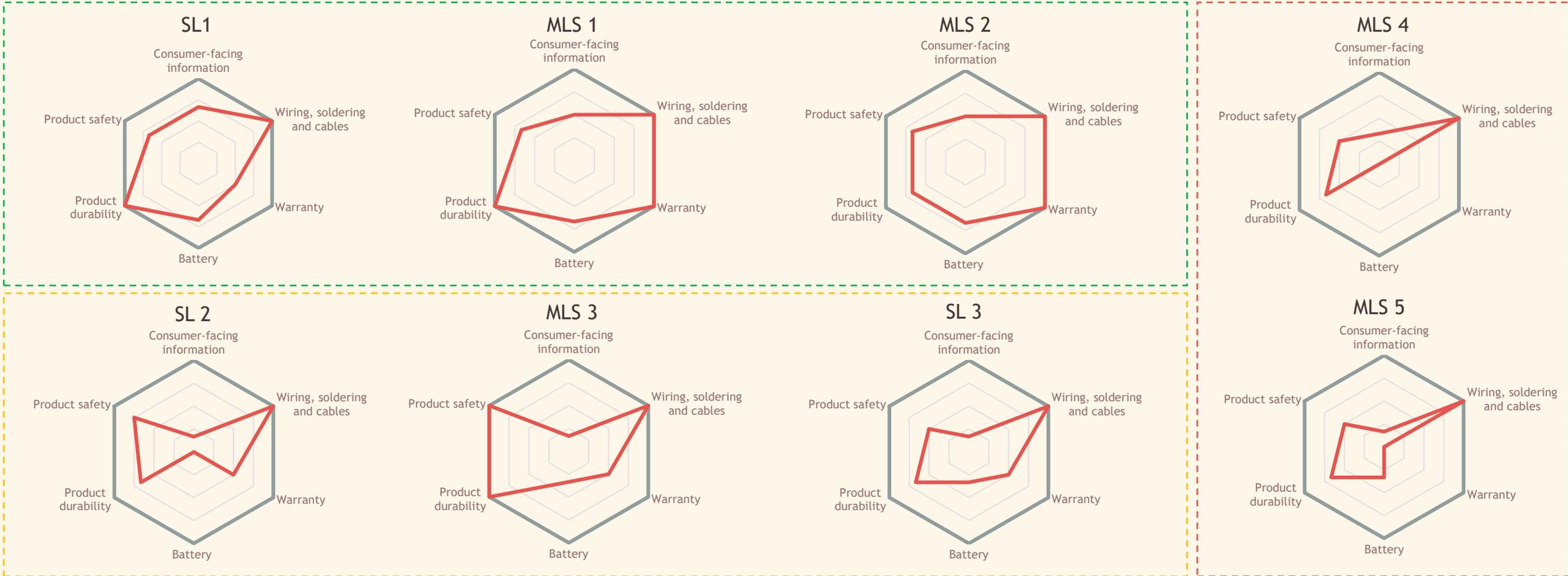
3 key insights



1. There are 50 shades of grey in the non-QV OGS market: the non-QV OGS market includes products with all levels of performance

CLOSE TO STANDARDS

FAR FROM STANDARDS



RELATIVELY FAR FROM STANDARDS

**SL - solar lantern. MLS – multi-light system*



2a. The cost of tweaking some of these products to meet the standards would add just 1-5% to the product's FOB* price

Estimated cost of tweaks for MLS 2** to meet Lighting Global Quality Standards



- Cost of tweaks needed to reach LG standards
- LG standard
- Product performance

Total cost of tweaks to reach standards : \$0.2-0.51
(1-5% of product's retail price)

* FOB – Free on Board, i.e. the price of the product before shipping expenses
 ** Multi-light system deemed close to meeting the Lighting Global Quality Standards

2b. The price-quality sweet spot exists: non-QV products are emerging with the potential to meet the standards at competitive prices

Comparison of cash-sales recommended retail price (RRP) for comparable QV and the tested non-QV multi-light systems (two-to-four light points, with mobile phone charging)



Products are compared based on their measured battery capacity, used as the best available proxy to compare similar products
Sample sizes: non-QV products = 11 (including 2 sweet spot products); QV products sample size = 4
Sources: GDC research and quality testing (for detailed sources please see the full report)

3. Customers and distributors may be taking a stab in the dark, as they seem unable to identify sweet spot products

Best-selling
non-QV products



Products meeting the
Lighting Global
Quality Standards

Is this due to

- *Inability to identify quality?*
- *Low expectations of quality?*
- *Choosing price over quality?*
- *Other?*

Panel discussion



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Thank you!

<https://globaldistributorscollective.org/research-and-insights>

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Appendix

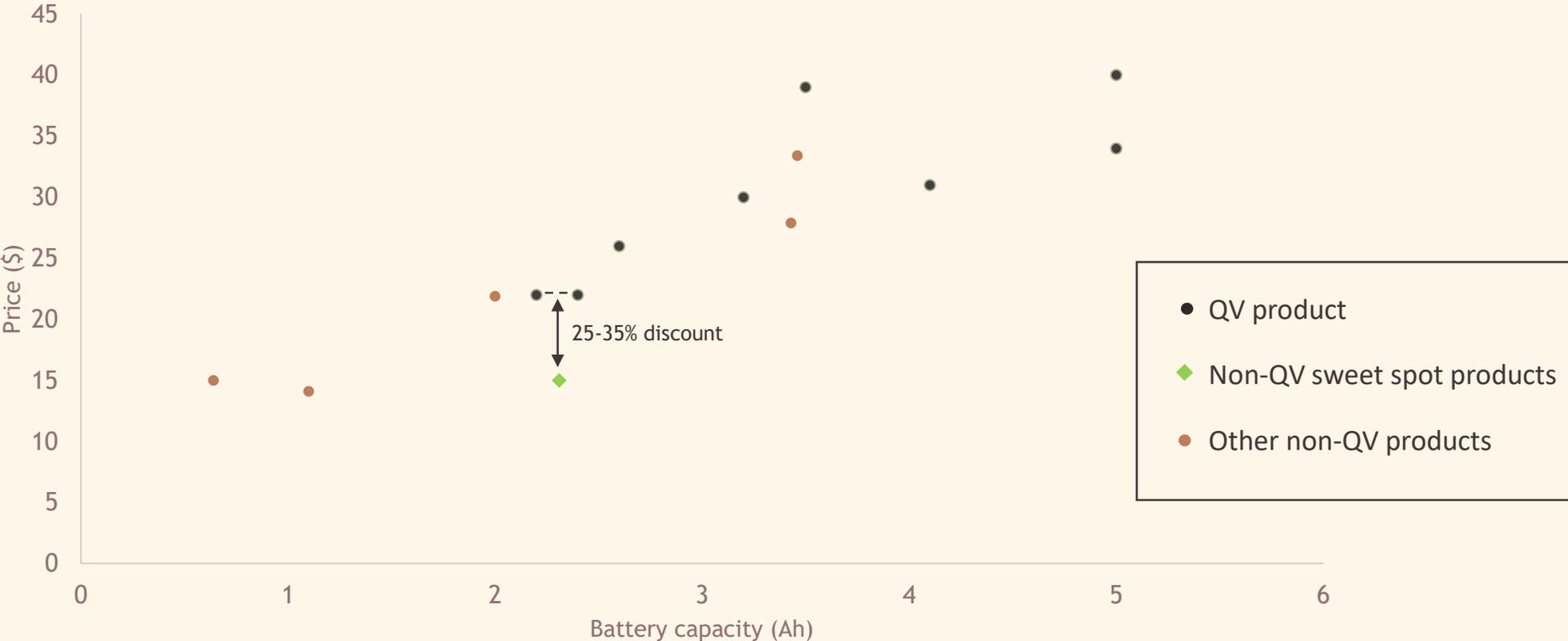


Specifications of products put through full ISM testing

Product	Battery type	Measured battery capacity (Ah)	Panel size (Wp)	Number of light points	Mobile phone charging
SL 1	Li-ion	2,31	2	1	Yes
SL 2	SLA	3,46	3	1	Yes
SL 3	SLA	3,43	3	1	Yes
MLS 1	Li-ion	5,4	5	3	Yes
MLS 2	Li-ion	4	5	3	Yes
MLS 3	SLA	2,39	6	2	Yes
MLS 4	SLA	2,68	3	4*	Yes
MLS 5	SLA	4,06	3	4*	Yes

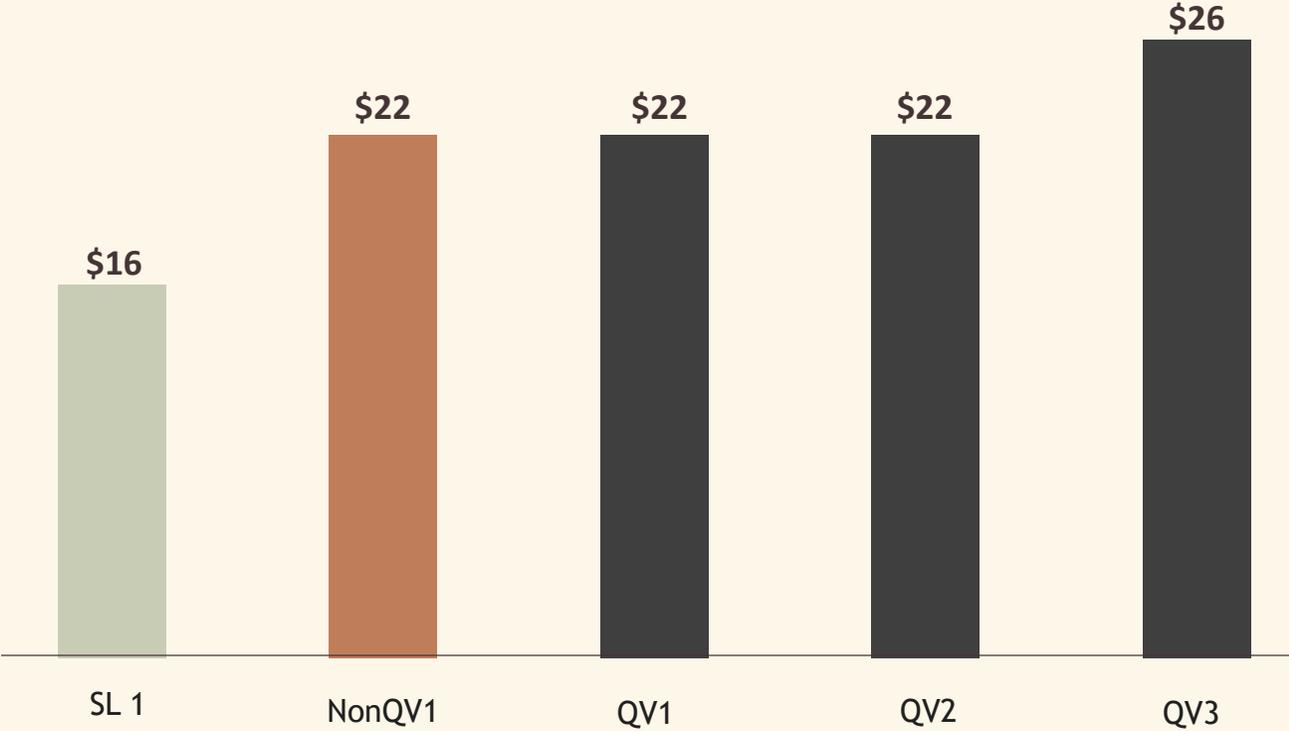
*one of these light points is an independent torch

Comparison of cash-sales recommended retail price (RRP) for comparable QV and the tested non-QV solar lanterns (one light point, with mobile phone charging)



Products are compared based on their measured battery capacity, used as the best available proxy to compare similar products; other metrics of comparison, such as available daily electrical energy (Watt-hour/day), were not available. Non-QV products are selected from the 18 products that were put through ISM pre-tests and ISM full tests; sample size = 6 (including 1 sweet spot product). RRP for non-QV products are estimated based on field survey data; RRP for sweet spot products are estimated based on Hystra modelling; battery capacity is based on ISM testing results. QV products have been selected based on a) leading QV brands in Kenya, b) product specifications and c) available data; sample size = 8. RRP were estimated based on wholesalers' data and consultations with manufacturer representatives; battery sizes are based on specification sheets on the Lighting Global website (soon to be integrated with the VeraSol website).

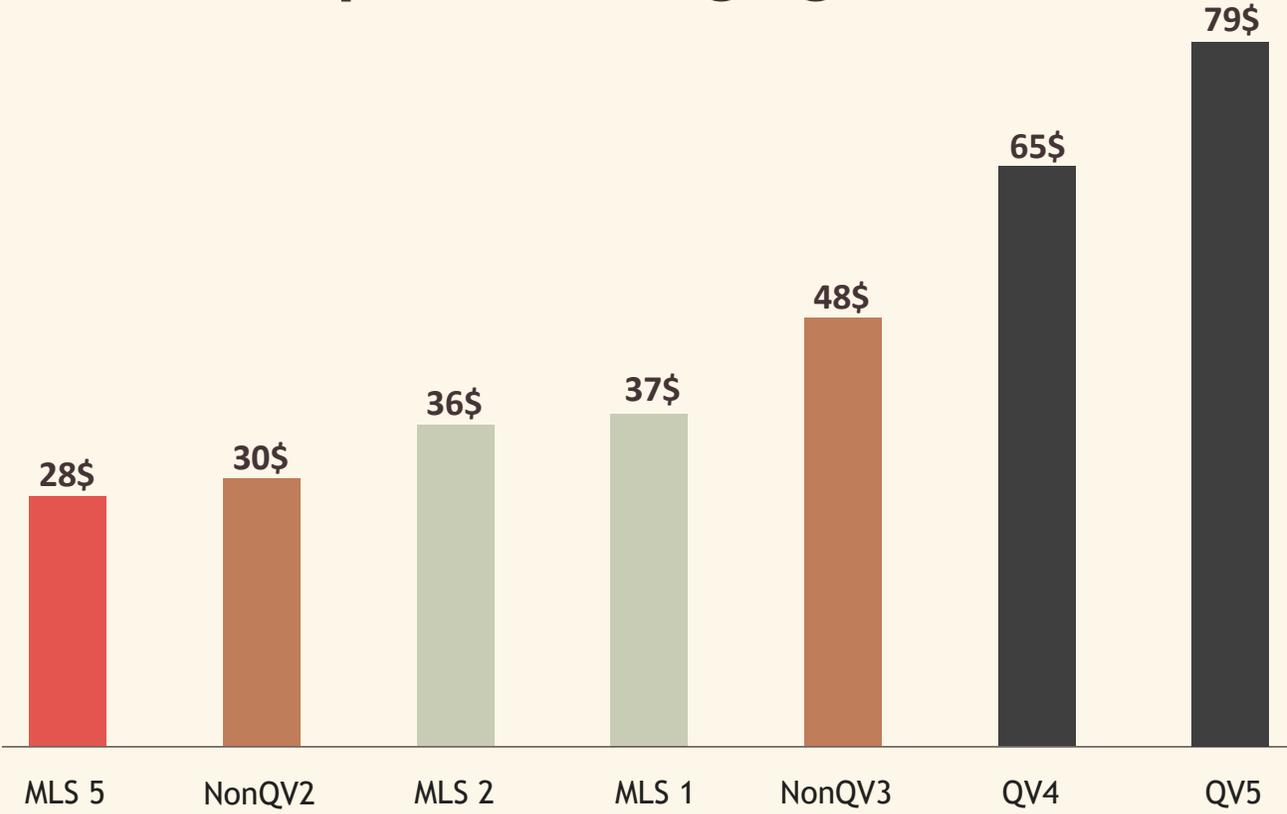
Comparison of cash-sales RRP for solar lanterns with 2-2.6 Ah batteries and 2-3 Wp PV-modules with one light point and mobile phone charging



Product specifications	SL1	NonQV1	QV1	QV2	QV3
Battery capacity (Ah)	2,31	2	2,2	2,4	2,6
Battery type	Li-ion	SLA	Li-ion	Li-ion	Li-ion
# light points	1	“1 LED” & “32 LEDs” options	1	1	1
Panel size (Wp)	2	3	2,3	2	2,4
Mobile phone charging	YES	YES	YES	YES	YES

- QV product
 - Sweet spot product
 - Removed after pre-tests
- } Non-QV products that underwent full ISM testing
- } Non-QV products that underwent ISM pre-tests only

Comparison of cash-sales RRP for multi-light systems with 3.3-6Ah batteries and 3-10W PV-modules with 3-4 light points and mobile phone charging



Product specs	MLS 5	NonQV2	MLS 2	MLS 1	NonQV3	QV4	QV5
Battery capacity (Ah)	4,06	4,54	4	5,4	3,61	3,3	6
Battery type	SLA	SLA	Li-ion	Li-ion	SLA	Li-ion	Li-ion
# light points	3 + torch	3 + side lamp	3	3	4 + torch	3	3
Panel size (Wp)	3	3	5	5	10	6,5	6,3
Mobile phone charging	YES	YES	YES	YES	YES	YES	YES

- QV product
 - Sweet spot product
 - Low ease of compliance
 - Removed after pre-tests
- Non-QV products that underwent full ISM testing
- Non-QV products that underwent ISM pre-tests only