Global Distributors Collective

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

Executive summary

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Last mile distributors (LMDs) of beneficial products need access to products that are high quality, meet customer preferences, and can be sold at the last mile at affordable prices. Today, in the off-grid solar (OGS) sector, LMDs have difficulty accessing such products due to two key challenges:

- **Challenge one – Product selection:** LMDs struggle to identify the products that are best suited to their customers' needs, and find themselves stuck between quality-verified (QV) products, known to be high quality but carrying a relative price premium, and non-quality-verified (non-QV) products, sold at more affordable price-points yet lacking in quality assurance.
- **Challenge two – Product importation:** once LMDs have selected products, they often have to import them due to lack of (or limited) in-country stock. The whole importation process requires significant management time, as well as working capital, which in addition to creating significant hassle for LMDs, also translates into high additional costs per product. LMDs have no other choice than to reflect these in end-user prices.

This report provides a methodology and insights that can help respond to the first challenge: finding products at the price-quality "sweet spot". The Global Distributors Collective (GDC) is also piloting a model which aims to address the second challenge (product importation), to test if it is possible to make more affordable, quality products accessible to LMDs and thus to their customers (see page 5 for more details).

We ran a rigorous funnelled process to identify 18 best-selling, price-competitive products out of 100 products found in the Kenyan non-QV market and subject these to quality testing at an approved Lighting Global laboratory, in a bid to identify products that meet, or are close to meeting, Lighting Global Quality Standards. For those close to the standards, we identified the key tweaks required in order to make these products fully conform with the standards. Finally, we developed estimates of the likely cost of making these tweaks and supplying these products with a valid warranty and in-country after-sales service. Three key insights came out of this research:

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

All 18 tested products fail to meet Lighting Global Quality Standards, yet their performance varies significantly. Out of the eight "finalists", as seen in figure one, three products are close to meeting the standards.

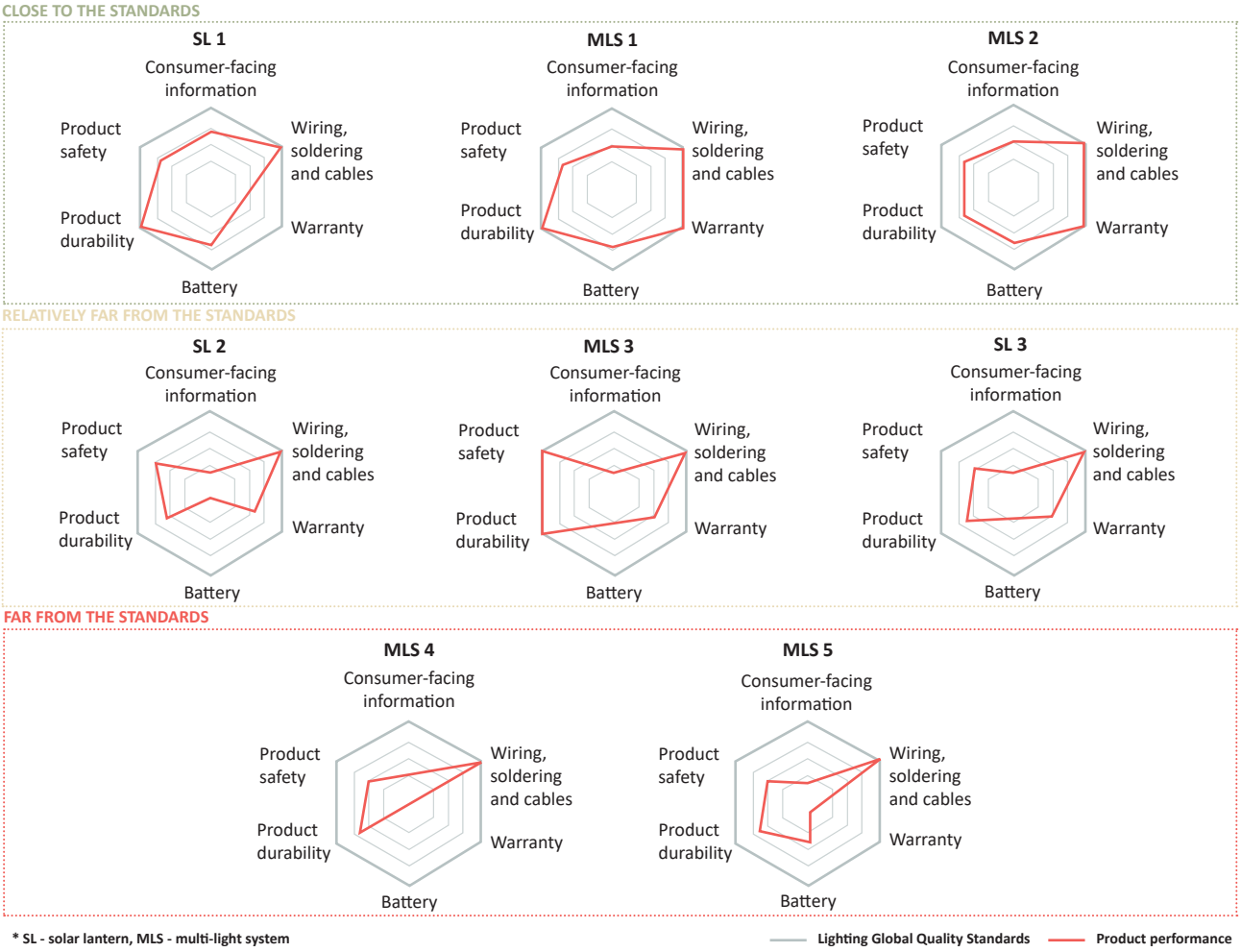

Figure 1: Comparison of Initial Screening Method (ISM) test results against the Lighting Global Quality Standards[1]

2. The price-quality sweet spot exists: non-QV products are emerging with the potential to meet Lighting Global Quality Standards at competitive prices

The tweaks needed to make the three best-performing products in this sample compliant with the Lighting Global Quality Standards **would add just one to five per cent to these product's Free on Board (FOB) pricing**[2]. Even with the provision of a two-year warranty and after-sales, these tweaked products could be sold at:

- **25-35 per cent cheaper** than the average leading QV products in the market today with similar specifications, for solar lanterns
- **40-55 per cent cheaper** for multi-light systems with two-to-four light points[3]

Further research is needed to understand why the difference in price may be so significant (reasons may include cheaper design, leaner operations, etc.). These lab results also remain to be confirmed on the ground and at scale, including seeing whether multiple batches achieve sufficient quality consistency. Nevertheless, these estimates point to a potentially significant business and impact opportunity to make sweet spot products more broadly recognised by and available to LMDs and their customers.

1. The red lines on the radar charts show where each product lies in relation to the Lighting Global Quality Standards. The wider the area inside the red line, the closer the product is to the standards. Initial Screening Method (ISM) tests have been grouped into six categories; the breakdown of this categorisation is shown in the appendix, in figure 17. Each product has been given a score for each category based on the number of tests it passed over the total number of tests available for a given category, expressed as a percentage (whereby 100 per cent = meeting Lighting Global Quality Standards).

2. This is a theoretical estimate based on manufacturer interviews that would need to be proven in practice.

3. This is a theoretical estimate based on industry benchmarks drawn from an established manufacturer in the off-grid solar sector; Sollatek (an established wholesaler in the sector) and consultation with experts in the field. It includes some marketing support and LMD credit financing, as well as after-sales and an LMD margin. This estimate does not include the cost of attaining Lighting Global certification and assumes tax exemption is applied. Further research is needed, which the GDC intends to pursue via its pilot described on page 5, to test whether these products could remain in the price-quality sweet spot if supplied to distributors with reliable after-sales support, consistent batch quality and short lead times on the ground.

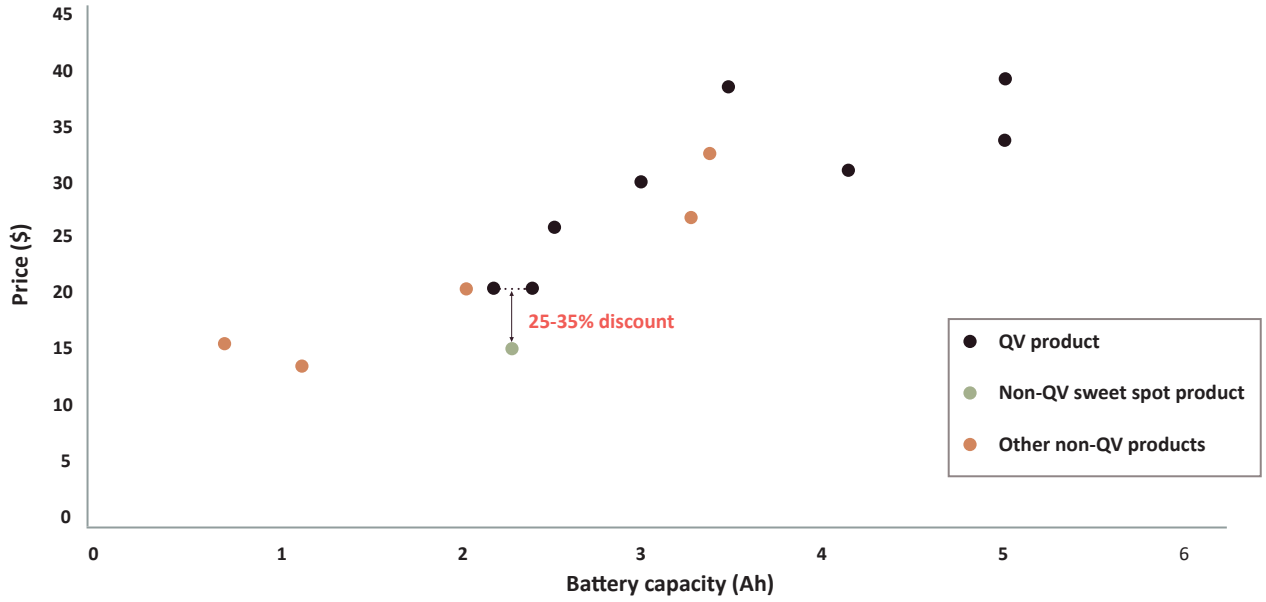

Figure 2 : Comparison of cash-sales recommended retail price (RRP) for comparable QV and the tested non-QV solar lanterns (one light point, with mobile phone charging)[4]

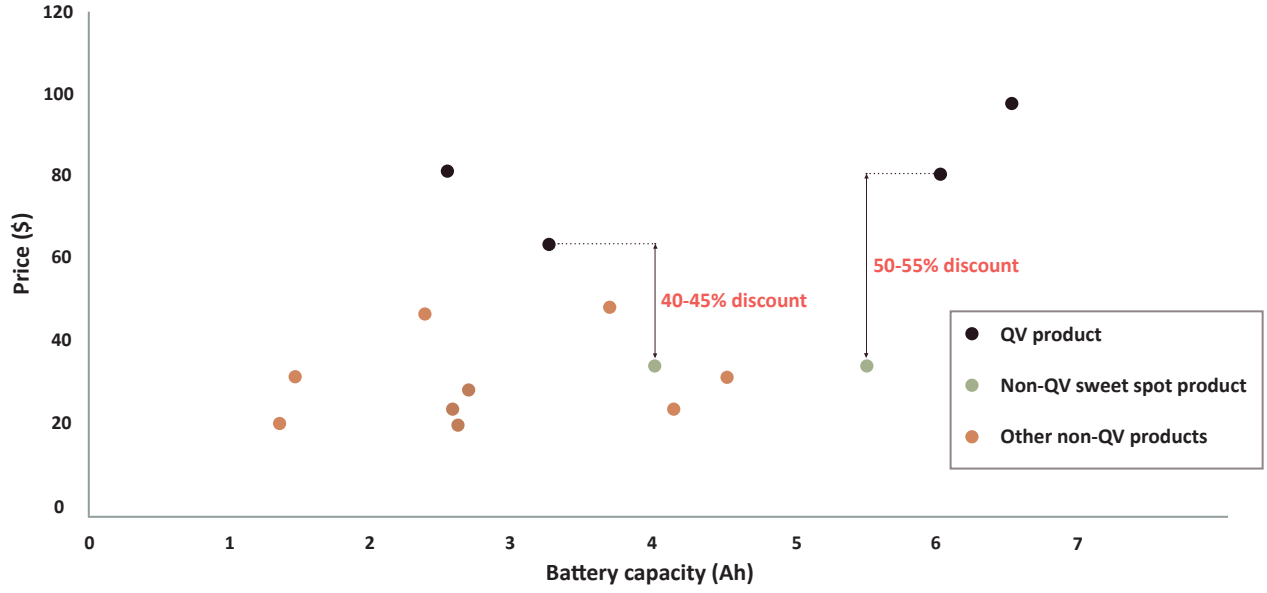

Figure 3 : Comparison of cash-sales recommended retail price (RRP) for comparable QV and the tested non-QV multi-light systems (two-to-four light points, with mobile phone charging)[5]

4. 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 = six (including one sweet spot product; one tested solar lantern was removed from the sample because the battery capacity could not be measured during testing as the sample was non-functional). RRP for non-QV products are estimated based on field survey data; RRP for sweet spot products are estimated based on the data described in footnote 7; 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 = eight. 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).

5. Non-QV product sample size = 11 (including two sweet spot products). QV products sample size = four. Data sources are consistent with those described in footnote 4.

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

Many of the best-selling products identified via the field survey did not emerge as those meeting – or being closest to meeting – Lighting Global Quality Standards. One reason for this may be that distributors and customers lack awareness of and/or are unable to identify best-performing products (in terms of the quality) in the non-QV market. Customers may have also developed low expectations in terms of product durability due to the frequent product failures in the non-QV market. This means that they buy the same brand again, even if it failed only after a few months, because they expected to have to do so in the first place and do not know of any price-competitive alternatives.

Another possible explanation is that customers are knowingly choosing price over quality, opting for poorer quality products at cheaper prices. There are many reasons why this may be the case: the quality of energy services provided by non-QV products may be lower than comparable QV products, yet meet customer needs nonetheless. Some non-QV products may also have a more rudimentary design (as was the case for one of the products put through quality testing) that allows for easier replacement of components, meaning they could be easier to maintain without having to consult the manufacturer to service a warranty.

Whatever the cause, the result is that distributors focusing on quality-certified offerings partly lose out to more price-competitive offerings, and customers – especially those at the last mile - end up spending more money than needed on poor quality products that they have to buy over and over again.

We therefore need to find ways of making 'the invisible, visible', by exploring new opportunities for the sector to identify and promote sweet spot products, including:

- **Identify existing sweet spot products:** for instance, by increasing access to Initial Screening Method (ISM) testing (the full set of quality tests used for this report) for manufacturers committed to improving their product quality based on test results.
- **Support manufacturers in developing more sweet spot products:** for instance, by raising the awareness of Lighting Global Quality Standards amongst new manufacturers in the sector and helping them reach those standards.
- **Help sweet spot product manufacturers find a route to market via distribution partnerships:** for instance, by matchmaking manufacturers and local wholesalers or larger distributors who can make products more widely accessible to local distributors.
- **Help customers identify sweet spot products:** for instance, via a customer-facing label. Beyond finding the right design for this label to correspond to what customers value, such an initiative would also need to secure resources to maintain the label's integrity over time to counter the risk of fraud.

GDC pilot: helping Sollatek, an established wholesaler, identify and supply sweet spot products to LMDs in East Africa

The GDC is working to capitalise on the findings outlined in this report and turn them into a direct and practical opportunity for LMDs to procure competitive, quality products at lower costs. To do so, it has partnered up with Sollatek, an established wholesaler in the off-grid solar market, operating in East Africa, to import a small catalogue of sweet spot products and supply these in-country with low minimum order quantities, credit payment terms and a two-year warranty to be serviced in-country.

The lessons from this pilot, due to launch later this year (2020), will be publicly disseminated with a view to enabling other wholesalers and distributors to replicate and scale this initiative, both in off-grid solar and other sectors across other geographies.

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

As the off-grid solar (OGS) market has matured, and product choice has expanded, distributors and customers report finding it increasingly difficult to identify and procure high-quality, affordable products at the last mile.

This report brings together the GDC's findings from 6 months of research on the quality of best-selling non-quality-verified (non-QV) products in Kenya. Through a funnelled field survey and quality testing led by VeraSol, our research identified non-QV products that are close to meeting the Lighting Global Quality Standards while remaining highly price-competitive with leading products in the market today.

The GDC is an initiative by:

Practical ACTION

BoP INNOVATION CENTER

HYSTRA hybrid strategies consulting

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