Lighting Global Quality Assurance: The Most Widely Recognized QA Framework for Off-Grid Energy Kits

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The off-grid energy market is characterized by products with varying levels of quality. Some are designed and manufactured well, while others fall short of expectations for safety, durability, and performance. For example, Lighting Global tested best-selling pico-solar products from major markets and found that 94 percent had one or more deficiency that affect product durability.

Poor quality products can lead to "market spoilage" in which consumers lose trust in an entire type of technology because of their—or their neighbor's— negative experience. For bottom of the pyramid consumers, purchasing a solar product can be a major decision and investment; spending limited funds on a poor-quality product can be devastating. Many markets for off-grid solar products do not have robust consumer protection frameworks, meaning warranties are difficult to access, regulations are underdeveloped or inconsistently enforced, and few remedies exist for malfunctioning products. Without effective quality assurance measures in place, consumers will remain vulnerable to financial risks posed by low-quality products.

In this environment, product testing and standards provide quality assurance for the market and improve consumers' access to good-quality products. Reliable information about the performance, durability, and safety of products is necessary to the smooth functioning of any product market, all the more so for complicated last-mile markets featuring innovative businesses in need of quality market intelligence. Such information enables purchasers to compare product offerings across manufacturers, investors to reduce risk, and governments to effectively regulate commerce.

Generating such information requires standardized product definitions and classification systems, test methods, performance metrics, and targeted communication with purchasers and other market stakeholders. These are the elements of a quality assurance framework.

Lighting Global Quality Assurance is designed to support the development of markets for modern off-grid lighting and energy systems. The program provides buyers with reliable technical information and connects them with manufacturers and sellers of quality-verified products. Over the past 10 years, the program has developed and maintained the world's most widely recognized QA framework for pico-solar products and SHS kits. Lighting Global's QA framework focuses on consumer protection, while serving a broad market audience and meeting many diverse stakeholder needs. At the core of this framework are the Lighting Global Quality Standards, which define minimum requirements for performance, safety, durability, and truth-in-advertising to protect consumers. There are many reasons for companies and institutions to accept only products that meet these standards, including:

- The Lighting Global Quality Standards are the only internationally recognized standards for these products and are expected to be adopted by the IEC in 2019.

- The standards are built upon widely accepted IEC test methods, originally established as Lighting Global test methods, backed by a global network of labs capable of testing to these methods.
- There is a wide selection of standards-compliant products readily available, with more than 150 quality-verified products currently listed on www.lightingglobal.org.
- Companies have accumulated substantial experience designing and manufacturing to these standards, with more than 30 million standards-compliant units sold to date.
- The standards and test methods have benefited from more than $10 million in direct investment over 10 years to develop, promote, support, and revise them to ensure they are optimized to the needs of the market.

Lighting Global Quality Assurance provides independent, third-party verification that a product meets these standards and maintains an up-to-date public list of all such quality-verified products on the Lighting Global website. To provide this assurance, our team of experts oversees all aspects of the product's evaluation. This includes generating custom test plans, overseeing product sampling, fielding any questions from the test lab, reviewing draft test reports, and interpreting the test results. Only products that make it through this rigorous process and meet all of the applicable standards can be listed on the website.

Lighting Global Quality Assurance further protects consumers by checking that quality-verified products available in the market continue to meet the Quality Standards. Lighting Global QA carries out both laboratory testing of quality-verified products and visual assessment of consumer-facing information found in shops and online. Products that are found to be deficient are removed from the website if manufacturers do not make corrections to bring them in line with the Quality Standards. Market surveillance instills trust in the integrity of the product quality verification process.

To ensure the accuracy and reproducibility of test results, we require that all product testing be conducted by approved members of the Lighting Global Test Lab Network. We use practice tests to verify the capabilities of laboratory personnel and coordinate an ongoing program of inter-laboratory comparison testing. In addition, only those laboratories holding ISO 17025 accreditation to the applicable test methods are authorized to conduct initial qualification testing (QTM).

Market actors of all stripes benefit from Lighting Global Quality Assurance:

- **Manufacturers** more easily assess their own products, compare them against competitors' products, and make better informed product development decisions. A globally harmonized approach to testing and certification reduces barriers to entry into new markets and yields a standard "language" for communicating with consumers about products and what to expect from them. Designing to the standards also sends a signal to investors that the company is committed to quality. More than 100 companies have had their products tested, and more than 200 products have been quality verified to date.
- **Distributors** more quickly and easily identify products that will meet their customers' needs and expectations. This reduces risk, especially the financial and reputational risk associated with guaranteeing products to end consumers.
- **Investors** reduce risk by investing only in companies that trade in products designed to meet consumers' expectations for quality, performance, and durability. All else equal, lower risk means more attractive investment options and, potentially, greater investment in the sector.
- **Development institutions** increase impact and cost effectiveness by leveraging pre-existing infrastructure and limiting eligibility for program participation to only those products that meet certain minimum requirements. Further, by aligning requirements with international

standards, programs can improve the business case for participation and increase uptake. World Bank, GIZ and the Energising Development (EnDev) program, The UN Refugee Agency (UNHCR), and SNV Netherlands Development Organization are just a few of the institutions that benefit from Lighting Global Quality Assurance.

- **Governments** use the framework as a basis for their tax and duty policies, voluntary market stimulation programs, and product regulations to protect consumers. Aligning with international standards reduces the time and resources needed to develop and implement these policies and gives consumers expanded access to global product innovations. Ethiopia, Kenya, Rwanda, and Tanzania have adopted mandatory national standards that are aligned with the Lighting Global Quality Standards. Many other countries are expected to do similarly in the future. Consumers benefit from greater availability of high-quality products that deliver the energy services they require at an affordable price. They can trust manufacturers' performance claims and avoid investing in products that will not perform as expected.

As of 2017, off-grid solar products were providing electricity to an estimated 73 million households. This represents approximately 17 percent of the total potential market, including both off- and unreliable-grid households, meaning another 361 million households could still benefit from adopting off-grid solar products. Furthermore, quality-verified products constitute only about 30 percent of the off-grid solar market; the remaining 70 percent are of unknown quality. While the market has grown enormously in the last decade and the Quality Standards have played a major role in that expansion, there is clearly a lot more room for growth, both in the size of the market overall and in the influence of the Quality Standards.