

Lighting Africa Market Trends Report 2012

Executive Summary





A child holding a Greenlight Planet Sunking Pro™, Kenya.
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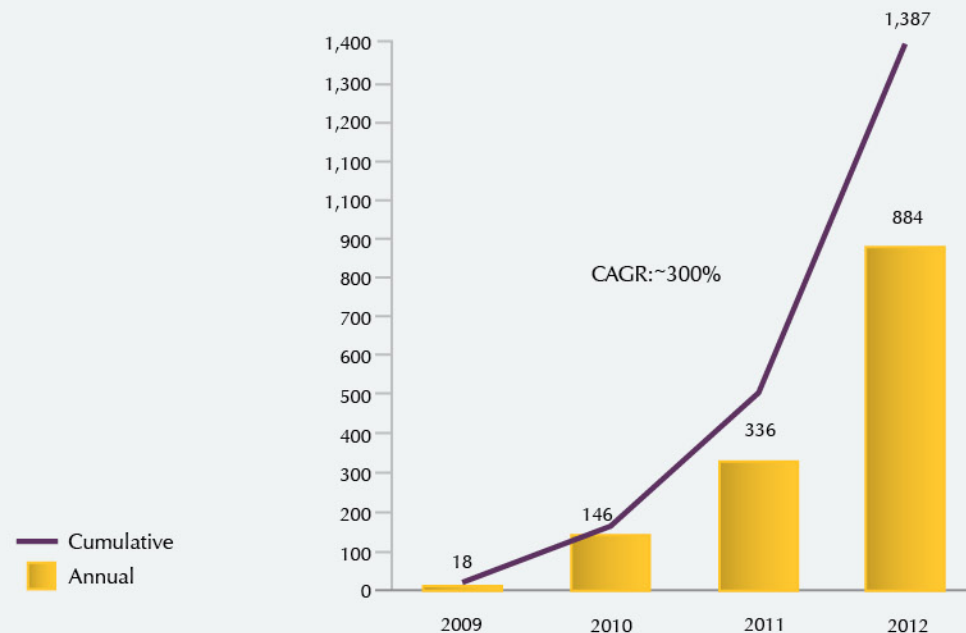
In 2010, when Lighting Africa first released a comprehensive report on the African lighting industry, an exciting future was heralded for a product set to revolutionize clean, affordable lighting for low income households. Annual growth rates of more than 85% were predicted under bullish circumstances, accompanied by rapid price drops and performance improvements, leading to a fast relegation of the traditional kerosene lantern to minority status by 2030.

Two years on, the market for quality lighting products has matured even more rapidly than predicted.

- Since 2009, the market in Africa has experienced dramatic growth—starting from approximately 300,000 lighting products in Africa in 2009 annual sales grew at 90-95% per year and reached approximately 4.4 million units by the end of 2012.
- Sales of Lighting Global quality-verified PLSs¹ have grown by 300%. The high volume of sales of quality-verified PLSs suggests an evolving consumer base that is becoming more experienced and aware. Self-reported sales data from quality-verified manufacturers indicate that there were close to 1.4 million quality-verified PLSs in the African market by Q4 2012. According to our best estimates, this represents more than a quarter of the total number of lighting products² in the market today.

Sales of Lighting Global quality-verified PLSs in Africa

Thousand PLSs; 2009-12



Source: Lighting Africa sales data (Q4 2012 update); Dalberg analysis

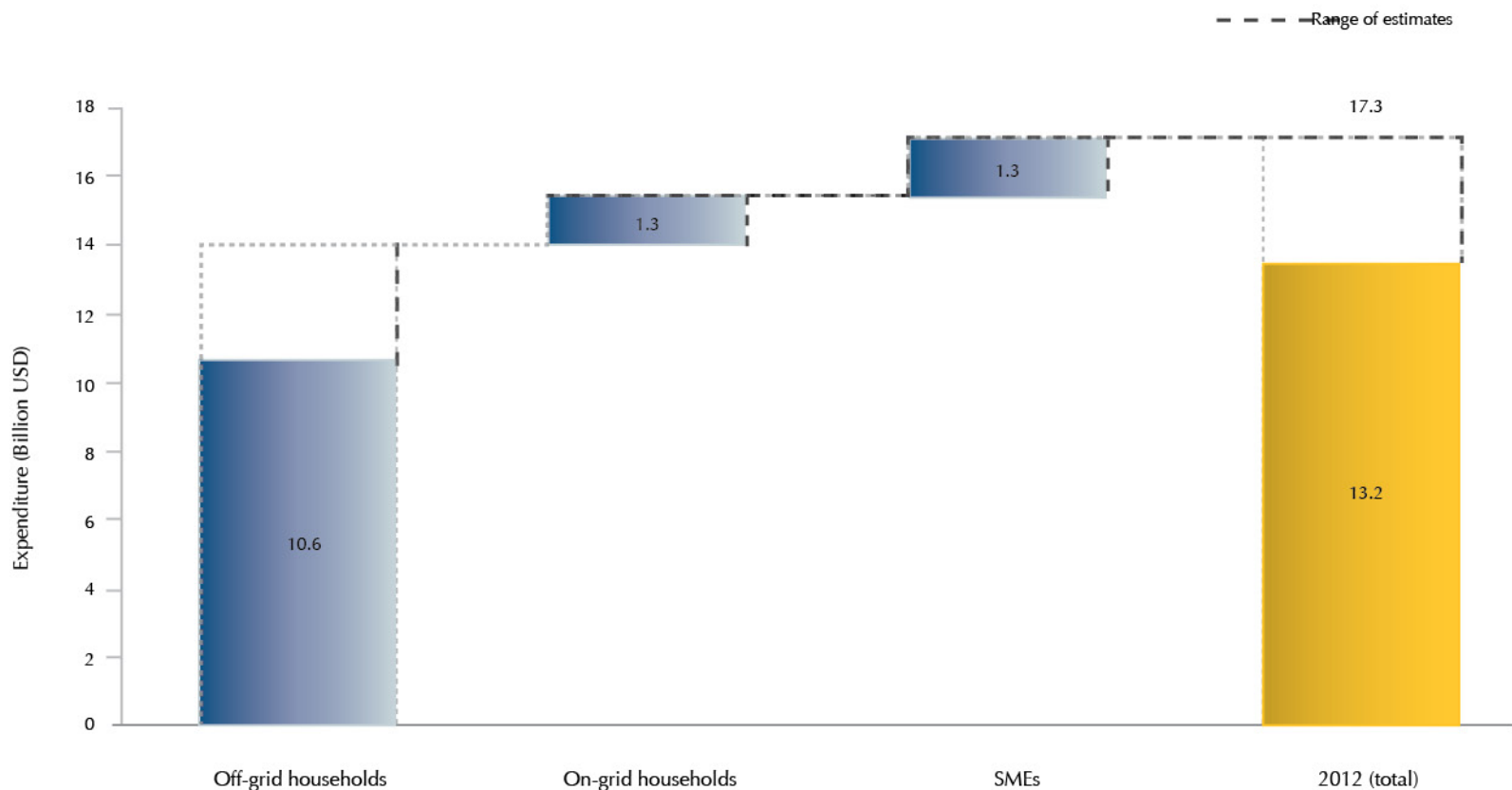
¹ Pico-powered lighting systems - PLS. The off-grid lighting space is fast-growing and encompasses a wide spectrum of products and business models. However, for the purpose of this report, we have chosen to focus on an important sub-section of the market that we term 'pico-powered lighting systems' (PLS). The use of PLS terminology acknowledges the emergence and presence of other non-solar energy sources (including hand cranks, pedal power etc.) in the off-grid lighting market in Africa.

² Refers only to the types of pico-powered lighting systems that are specified in the full report's scope (Page 7 of the full Report).

- Penetration of lighting products has increased, but conservative estimates indicate that it still remains around 4% in Africa. Thus, there is significant scope for rapid growth in the future.
- Key demand side drivers identified two years ago remain relevant, and in some cases have become more important. These include (1) a population growth outpacing grid connection, implying an increasing off-grid population; (2) a fast-increasing mobile phone subscriber population that requires better and cheaper mobile phone charging options; (3) large and growing expenditure on non-renewable fuels for lighting (due in part to rising fuel costs), estimated to be approximately USD 13-17 billion in Africa in 2012.

BoP expenditure on lighting in Africa

Billion USD; 2012



1. Includes estimated expenditure on kerosene, batteries, candles and bio-fuel; the higher range of the estimate assumed higher kerosene usage among primary and secondary users, and higher secondary usage of battery-powered devices and candles.
2. Our estimate took into account population segments that paid a kerosene premium for buying the fuel in small quantities.
3. The average price of kerosene across Africa was estimated to be approximately USD 1.13 per liter.

Source: Primary data from the World Bank and the Asian Development Bank; Dalberg analysis.



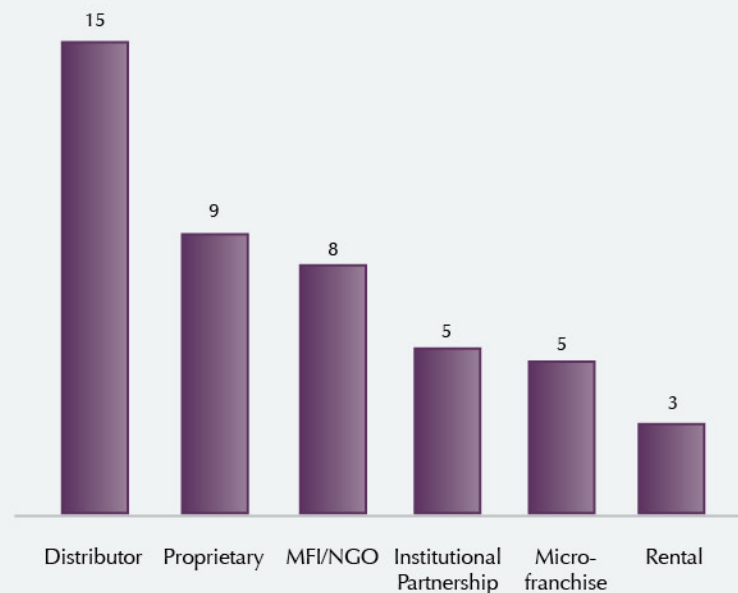
The number of Lighting Global quality-verified PLSs has increased.

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- The PLS market has witnessed the entry of new players. The overall number of manufacturers selling PLSs in Africa has grown sharply from 20 in 2008 to approximately 80 today, and, in tandem, the number of manufacturers of quality-verified PLSs has also increased—from six in 2010 to 25 currently.
- The size and diversity of players have also changed. Not only have several multinationals signaled their serious and long-term commitment, but also, existing players have transformed from small, social start ups to fully professional and maturing businesses.
- Approximately two-thirds of the major manufacturers supplying lighting products to Africa have their factories and production units based in China and these have accounted for almost 90% of estimated cumulative sales up to 2012.
- In the absence of any clear, winning distribution strategy, PLS suppliers have continued to experiment with different channels by focusing on customizing distribution to specific needs of customer segments within target geographies.

Frequency of distribution model utilization across surveyed market players

Number of respondents; N = 20 manufacturers



1. Manufacturers reported employing more than one distribution model at the same time, therefore, the total across models does not add to N.

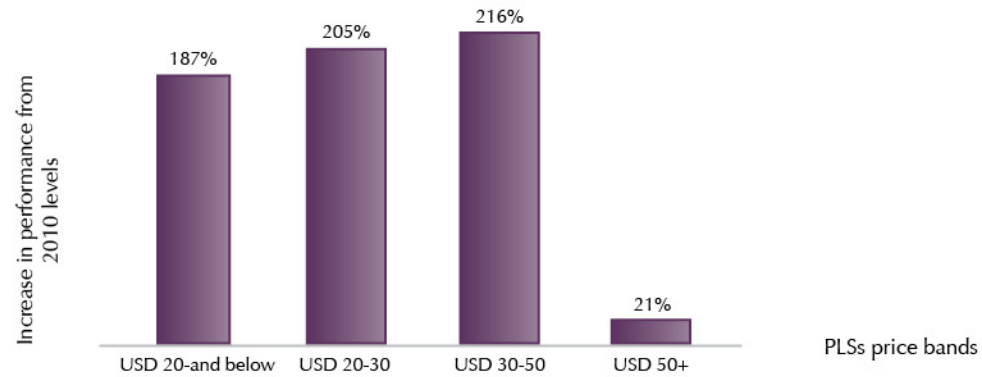
Source: Interviews with manufacturers and distributors; Dalberg analysis

PLSs offer much greater value to BoP customers than they did two years ago

- The average battery life of a PLS has increased by 20% to approximately six hours in 2012. Similarly, average brightness has increased by 30% to approximately 100 lumens in 2012.
- Average performance of a lantern – measured as a product of light output in lumens and the battery's solar run time – has increased by approximately 140% from 2010; the greatest increases in product performance are seen in mid-priced PLSs.

Comparison of average performance of PLSs within price bands over time

Percentage increase in performance between 2010 and 2012

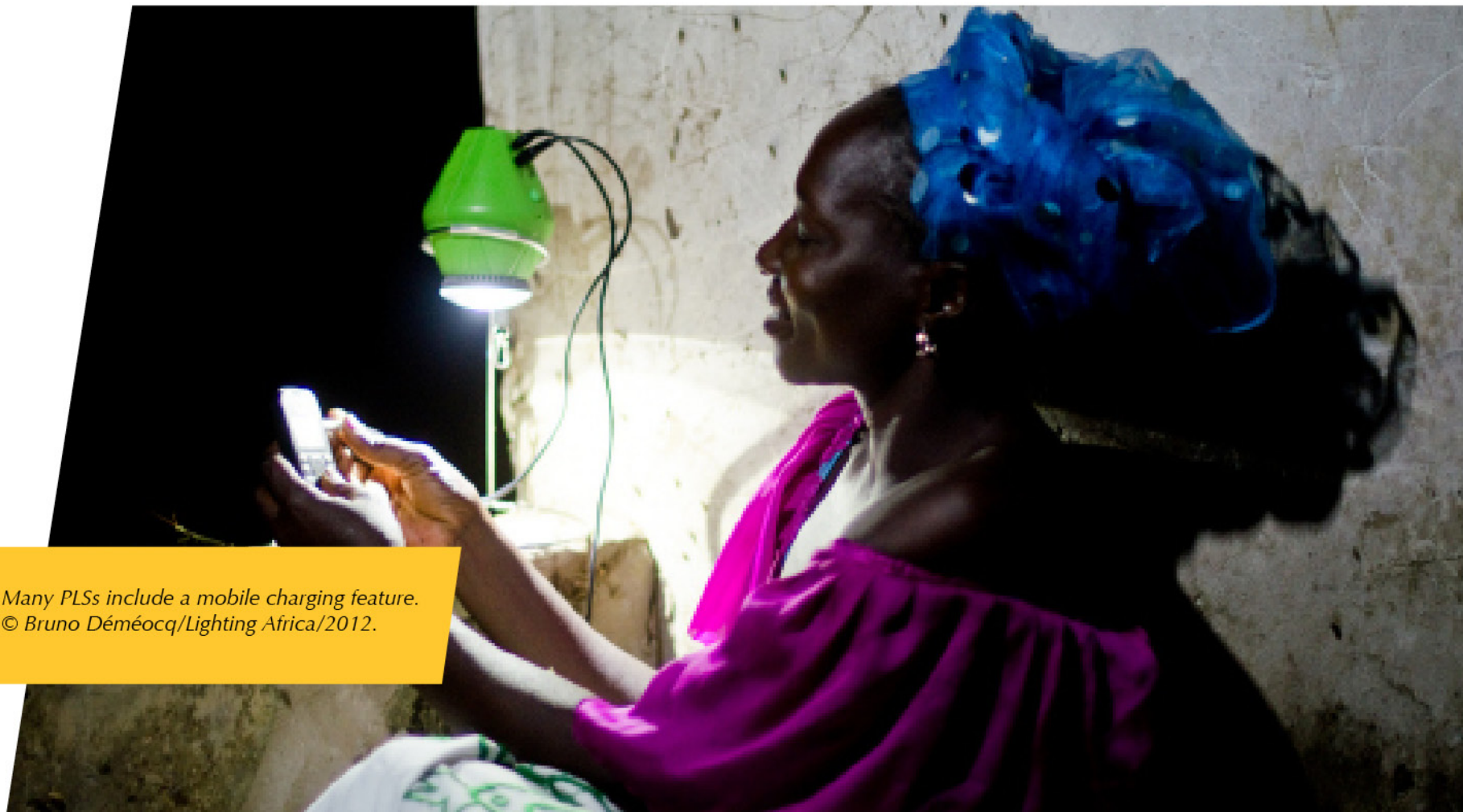


1. We refer to an increase in the performance per unit price from the baseline of 2010.

Source: Dalberg analysis

- The ten top-performing PLSs in the African market include two types of players: (1) established brands that have been operating in the African market for at least two to three years and bring a reputation for quality and a history of high sales, and (2) brand new entrants that have been able to bring the latest technologies into the market.

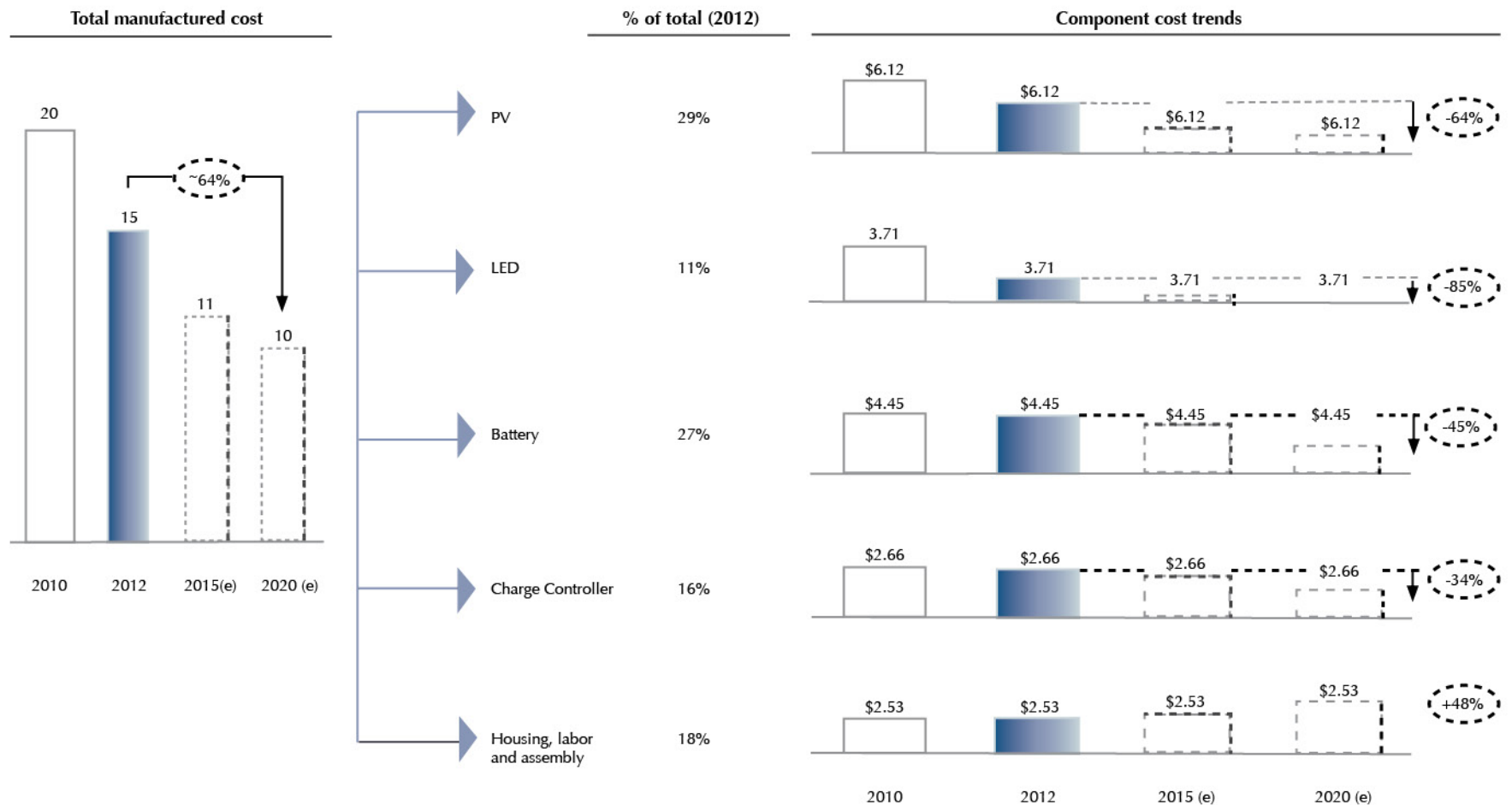
Many PLSs include a mobile charging feature.
© Bruno Déméocq/Lighting Africa/2012.



- In addition, the product range has also grown to emphasize consumer-oriented features and design. PLS suppliers are incorporating several value-added features as part of their standard offering to consumers. Mobile phone charging, for example, has become ubiquitous among PLSs. Other well-received and demanded features include charging-effectiveness indicators, a grid-charging option, and a torch mode.

Decomposition and forecast of the median solar-based PLS component cost

USD; 2010-2020



1. Performance holding constant.

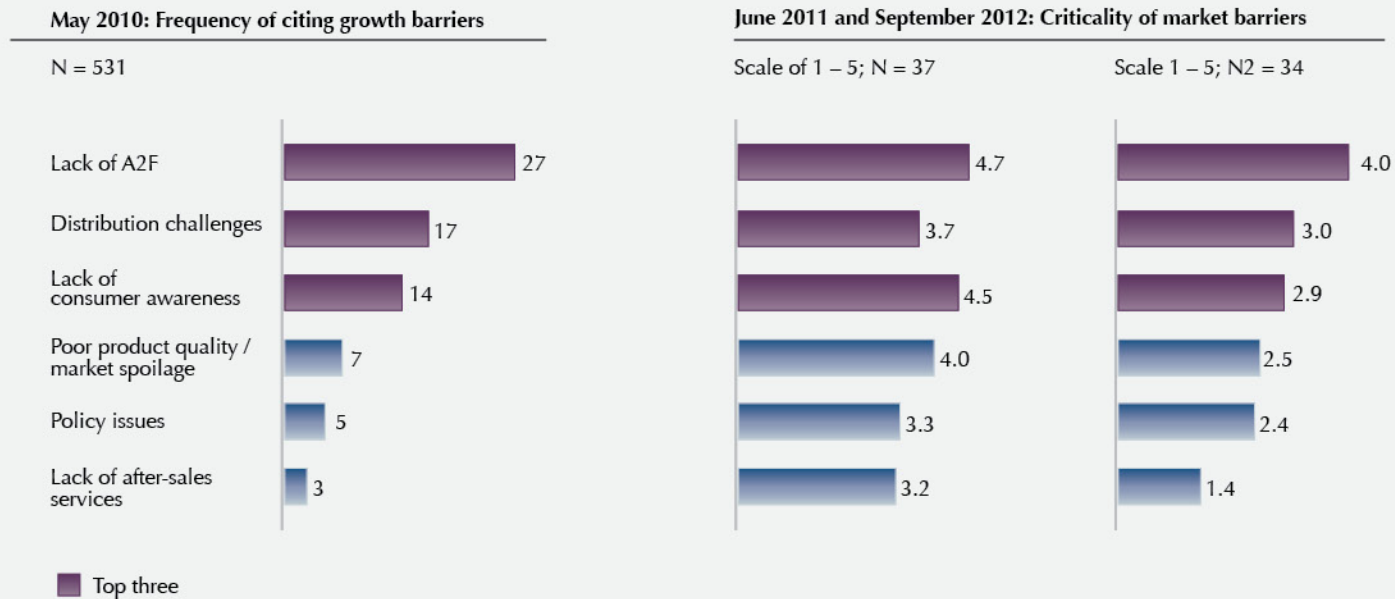
Source: GTM research; Thin Film Industry Forum; IRENA; US Department of Energy; McKinsey Industry reports; Pike Research; Lux Analysis; The Economist; Inter China Consulting Analysis; Interviews with manufacturers and technical experts; Dalberg analysis

- Driven by rapidly declining costs of major components (e.g. PV, LED and battery), the theoretical manufacturing cost (holding performance constant) has reduced by almost 25% from 2010, and is expected to reduce by another ~33% by 2020. Our estimates suggest that the median lantern in 2020 will exhibit twice the battery life and up to five times the brightness of the median PLS in 2012.

Barriers identified by market players have remained generally stable over time. Access to finance, distribution and lack of consumer awareness have consistently been the highest-rated challenges.

Evolution of market barriers as identified by PLS manufacturers and distributors

Percentage of respondents; 2010-12*



Several interviewees cited more than one barrier, which is why numbers below do not add up to 53. Interviewees represent 65-70% of the quality market

Source: Interviews with manufacturers and distributors; Dalberg analysis

*the scales for 2010 and 2011/2012 are different, because the methodology used for collecting answers was different in 2010.

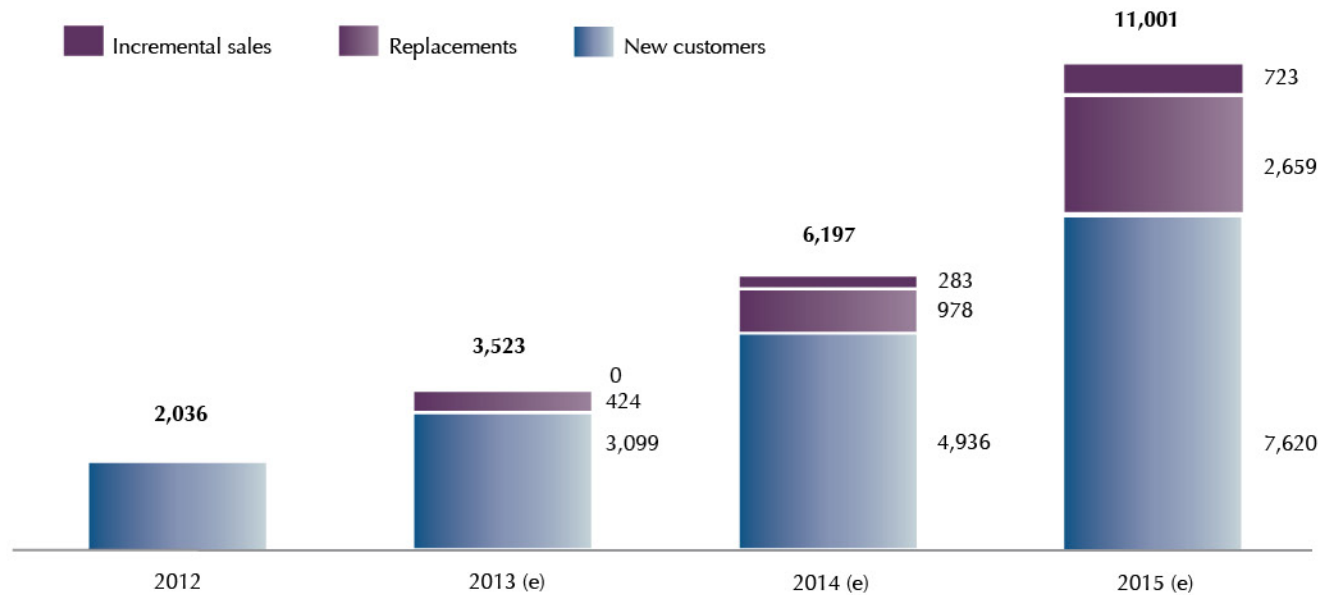
- The overriding upstream finance challenge was working capital for distributors attempting to reach remote, off-grid markets. End-user affordability was identified as the major downstream finance bottleneck.
- As the market matures and rural awareness and demand for PLSs increase, we expect distribution patterns and channels to mimic those of other consumer durables in the market such as TVs, fans and pressure cookers. For these products, the majority of rural sales occur at large towns and urban areas retail outlets.
- Consumer awareness among the African BoP for PLSs has improved, but remains low, particularly within remote rural areas. Targeted and effective consumer awareness campaigns, despite their positive impact on consumer willingness to pay, remain difficult to design and expensive to execute. However, as the market matures even further, marketing and advertising will become increasingly important components of product and brand differentiation.

The market for PLSs in Africa remains on a healthy trajectory. Currently, even our most conservative forecasts predict high growth rates over the next two-three years. These forecasts are based on the core macro-drivers including lagging grid growth, expected increase in fuel-based lighting expenditures, growing need for mobile phone charging options, as well as an improving supply of quality products. In addition, there are several emerging trends that can further accelerate this fast-growing market:

- The market is maturing and has proven itself economically viable, leading to greater interest from global electronic giants such as Schneider Electric, Philips and Energizer. Given their natural scale advantages and established distribution capabilities, a concerted effort by any one of these corporations could drive this market faster and higher.
- We observe the emerging use of technology in 'pay-as-you-go' models to overcome the critical consumer-financing hurdle. PLS companies have begun to incorporate GSM chips and mobile payments as a way of regulating the delivery of light on the basis of micro-payments. This could address a much larger customer-base that is currently severely affordability-constrained.
- We expect the emergence and increased presence of manufacturer-led brands, as opposed to the current market structure of pure manufacturers who focus solely on executing orders to specifications from distributors and branded players. Our conversations with these companies (a significant proportion of which are headquartered in China) indicate a strong inclination to establish a strategic, long-term presence in the African market over the next two to three years with their own branded product.
- Finally, as PLSs become more ubiquitous, manufacturers will see increasing demand from existing customers who have experienced the benefits and are looking to replace, upgrade and extend their PLSs. This aspect of the market could help drive 30% of annual volumes beyond 2015.

Evolution of annual sales of PLSs while considering replacements and incremental sales

Thousand PLSs; 2012-15



1. 75% of PLSs replaced every three years;

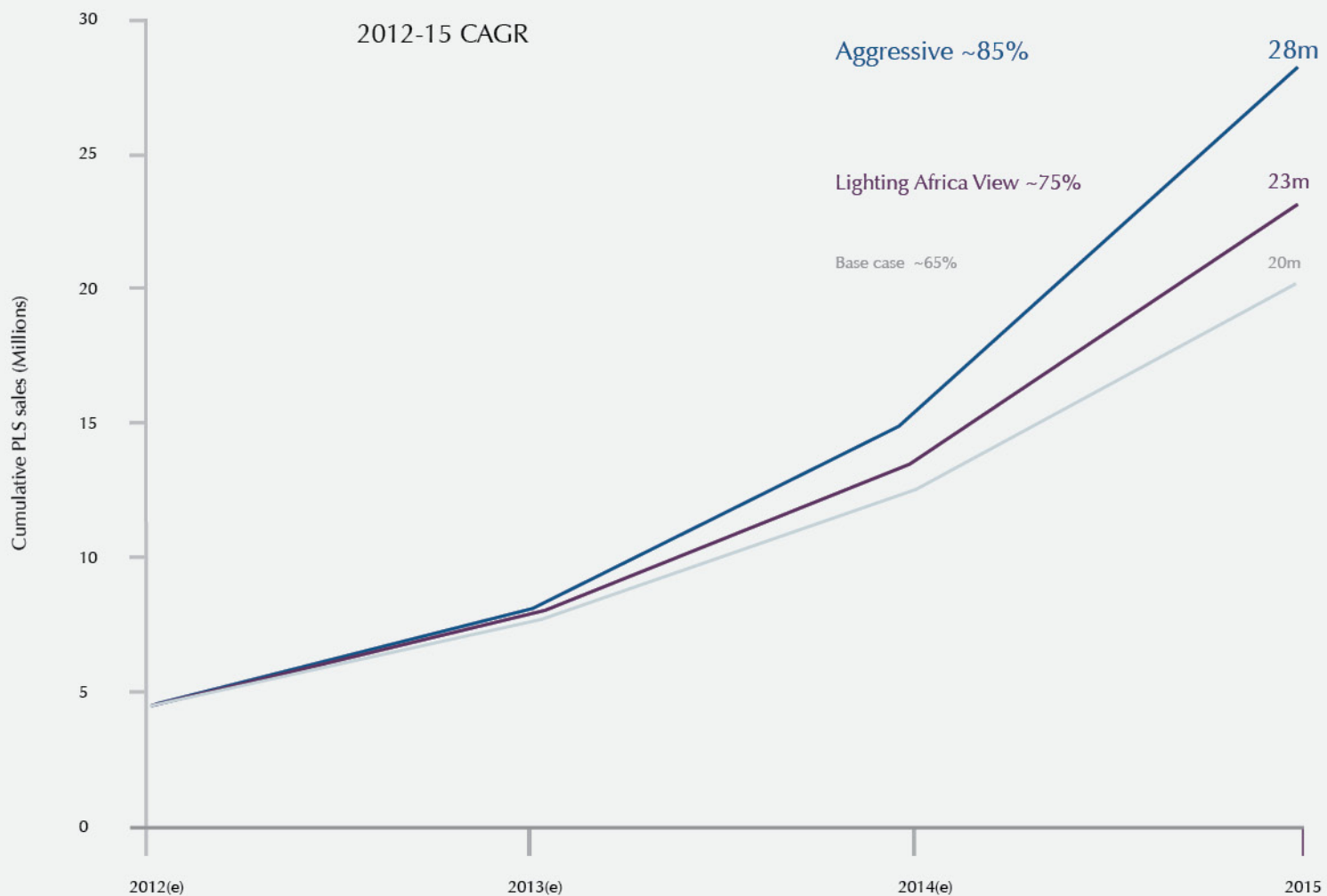
2. 50% of households will purchase an additional PLS every four years.

Source: Lighting Africa sales data; Dalberg analysis

In the presence of these four catalytic opportunities, the market could reach 5 million in total additional sales by 2015. This would imply a market growth of approximately 85% between 2012 and 2015, with cumulative sales growing to approximately 28 million PLSs.

Forecast of cumulative PLS sales in Africa over time

Million PLSs; 2012-15



Aggressive scenario assumes

- (1) Entry of 2 MNCs;
- (2) Entry of 2 additional manufacturer-led brands;
- (3) High growth of pay-as-you-go models;
- (4) and higher rates of replacement and incremental sales.

Source: Lighting Africa sales data; World bank data set on population; Dalberg analysis

