

MAY 2010



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# SmartLessons

*real experiences, real development*

## Designing Market Transformation Projects for the Base of the Pyramid: The Lighting Africa Program

*Once pushed to the periphery as an unattractive market segment, the mass of low-income consumers throughout the developing world—4 billion of them—are emerging as key players in the global marketplace and climate mitigation equation. Collectively, these base-of-the-pyramid (BoP) consumers make up the largest and fastest-growing segment of the world's population,<sup>1</sup> and the off-grid lighting consumers in Africa are no exception. With an estimated \$10-17 billion dollar/year market opportunity, proven demand, and market-ready technology solutions designed to meet consumer need, the essential ingredients for the development of considerable commercial markets to deliver modern off-grid lighting to the 500 million African off-grid lighting consumers at the BoP have never been more ripe. This SmartLesson illustrates some of the key lessons that the Lighting Africa program has learned in the process of assessing the potential for and designing of a market transformation program for the acceleration of off-grid lighting markets in Africa.<sup>2</sup>*



### Background

More than 500 million people in Africa continue to lack access to electricity. This is not expected to change in the foreseeable future; over the next 20 years, Africa is projected to rapidly surpass Asia to become the largest un-electrified market in the world.<sup>3</sup> To satisfy its lighting

needs, this population relies predominantly on fuel-based lighting (mostly kerosene), which is an inefficient, costly, and dangerous lighting option that presents significant safety and health risks. This fuel also releases potent greenhouse gases, which contribute to climate change. Opportunely, recent technological advancements have enabled the development of innovative off-grid lighting solutions with the potential to replace fuel-based lighting and that are, by design, tailored to consumer needs.

<sup>1</sup> Defined as those who earn \$1-2 per day, less than \$1,500 per year.

<sup>2</sup> While this SmartLesson draws from the Lighting Africa experience related to identifying opportunities for adopting a market transformation project approach, the next SmartLesson will discuss design and implementation of market transformation programs (see "Implementing Market Transformation Programs for the Base of the Pyramid: The Lighting Africa Program").

<sup>3</sup> Lighting Africa. "Overview of the African Solar Portable Lighting Market for Base of the Pyramid Consumers." Dalberg Development Advisors. Lighting Africa 2010 Business Conference & Trade Fair, May 18-20, 2010; Nairobi, Kenya.

Despite technological readiness and established market demand, substantial market barriers have prevented the global lighting industry from penetrating the off-grid lighting sector in Africa and competing with the kerosene industry for market share. The Lighting Africa program, a joint IFC–World Bank (WB) initiative, seeks to overcome this challenge through a host of interventions aimed at addressing these barriers, leveraging existing market strength, and facilitating business model innovation to accelerate new off-grid lighting product markets. The Lighting Africa example demonstrates that a market transformation program is a good project approach when a commercially viable market opportunity is present that will yield a meaningful development impact (e.g. mitigating climate change, increasing energy access, improving human health, etc.) but is constrained by market barriers preventing the private sector from taking hold of the opportunity. A market transformation approach enables the Lighting Africa program to provide an intentional hand in market function, opening the floodgates to markets that are capable of saturating retail shelves with a collection of superior off-grid lighting products aligned with market need and, in turn, ameliorating lives and supporting environmental well-being. The following lessons are intended for individuals across multiple sectors interested in accelerating new commercial markets at the BoP.

## Lessons Learned

**1) A market transformation approach makes sense if the following conditions are met: To ensure you have a good case for market transformation, take the following four steps for evaluating the potential of a market transformation project.**

If the following conditions exist—a sizable commercial market opportunity; strong investment incentives and private-sector motivation; a superior technology solution tailored to market need; and evidence of common market barriers preventing sector-wide penetration across the industry—a market transformation project approach makes sense. It would have been extremely difficult for us to justify the project and the need for a targeted WB/IFC intervention, or to gain critical industry buy-in without the existence of these conditions.

### Assessing the Potential for a Market Transformation Project

**STEP 1: ASSESS MARKET POTENTIAL: Is there a sizable commercial market opportunity and indication of sufficient demand?**

This was one of the initial first questions that the team set out to answer. The underlying assumption was that, if provided a superior technology alternative, consumers would be willing to pay *as much or more than* they are presently paying for illumination and yet receive a substantially higher value proposition in return. After a close inspection of the existing off-grid lighting market in Africa through in-depth industry interviews, field research, and extensive desk review, we found there to be virtually no diversification in the marketplace. Ownership of the market was predominantly ceded to the kerosene industry, with little competition from other industry sectors, including

### Box 1: About Lighting Africa

**Program Objective:** Support the international lighting industry to develop a commercial market in Sub-Saharan Africa to supply modern, off-grid lighting to 2.5 million low-income people by 2012.

#### Basic Program Details:

- Launched in 2007
- Successfully convened online industry consortium with more than 200 actively participating companies and more than 2,450 individuals
- Established an International Off-Grid Lighting Stakeholder Association to sustain commercial market development
- Operating budget of \$6.9 million (donor funded)
- Since its launch, the number of off-grid lighting products available for retail and specifically targeting low-income populations in Africa has grown from 10 to more than 70 products, manufactured by nearly 50 companies
- Products are now retailing between \$25-50 dollars versus before, when they were mostly above \$50 and Lighting Africa product awards show that price and quality can be achieved at same time
- Plans to expand to other countries and continents in the coming year

For more information, visit: [www.lightingafrica.org](http://www.lightingafrica.org)

the international lighting industry. Moreover, the market was heavily dominated by BoP consumers; the hundreds of millions of low-income earners living outside of the reach of the utility grid were spending exorbitant sums—as much as 10 to 30 percent of annual household income—on fuel-based lighting, a \$10–17 billion dollar market/year in Sub-Saharan Africa and a \$25–38 billion dollar global market/year (out of a \$185 billion global lighting market including on-grid lighting).<sup>4</sup> The potential market opportunity was sizable, but the lighting industry was unaware of its vast potential. By quantifying the size of the opportunity, we were able to gain the insight needed to sufficiently validate the market opportunity and earn industry confidence.

**STEP 2: ASSESS THE LOCAL BUSINESS ENVIRONMENT: Is there sufficient investment incentive for the industry to gain confidence in the emerging-market opportunity?**

The root of a successful market transformation approach is based on industry confidence in the market opportunity, which, as with any business venture, is tied to the perceived gains that can be accrued by playing in this marketplace. However, for the off-grid lighting industry to peddle low-price goods such as small portable lighting technologies to the BoP and effectively compete for market share against the established kerosene industry, positive profit margins and a good return on investment will be dependent on high volume sales and strong distribution networks that can rapidly disseminate product (especially to the informal markets of the remote rural populations). Without industry confidence in the market's ability to capitalize on a commercial opportunity, a market transformation approach is not likely to succeed. Our review of the current fuel-based market characteristics revealed multiple enabling market conditions that we shared with the industry, thus showing

<sup>4</sup> Ibid.

the potential for a lucrative business opportunity and getting the early-stage buy-in we needed from the industry to justify program development. These conditions included:

***Established Value Chain and Functioning Delivery Models in Competing Markets.*** The kerosene market is already well established, with functional distribution and sales networks and value-chain efficiency, reaching even the most remote areas. Similarly, consumer products like mobile phones, shampoo, food staples, and soft drinks have been marketed and channeled very successfully to BoP customers in those markets. This bodes well for the potential for the off-grid lighting industry to emulate these effective fast-moving goods delivery models.

***Successful Business Models Tailored to BoP Consumers Operating in Informal Local Business Environments.*** BoP markets in Africa, particularly in the remote rural areas, largely employ innovative business models that are customized and adapted directly to the local context and consumer needs (and often are proposed and negotiated by the end-users). These unconventional and mostly informal low-income rural retail economies support a wide range of distribution channels and nontraditional payment systems that enable consumers to pay for goods as their budgets allow (e.g., “pay as you go” or “fee-for-service” leasing agreements whereby incremental installments eventually lead to product ownership).

***Evidence of Proven Successes in Other Low-Tech BoP Commodity Sectors.*** The success of mobile phones and mobile banking in Africa is perhaps the best evidence of a small-scale, fairly low-tech commodity product that has made its way into the hands of millions of low-income consumers over an extremely short time horizon. By researching parallel analogies of successful business models and marketing strategies used to tap the BoP markets and sharing them with the industry, we were able to help build industry confidence in the potential market opportunity and, at the local level, in the increased options for building local capacity around testing, maintenance and repair, distribution, and potential small-scale production; innovative business models and marketing approaches are key to succeeding in the African marketplace and, thus, identifying examples of market success in other sectors is a good way to develop industry assurance in the opportunity.

***A Mature Industry Seeking New Growth Opportunities due to Near Market Saturation.*** The international off-grid lighting industry, like many established industries, is reaching a state of market saturation. We learned that this condition supported increased industry interest in moving into new emerging-market areas, even those as precarious as base-of-the-pyramid markets in Africa; Market saturation, or near market saturation, was a good indicator of industry confidence and readiness to take on new risk by investing in new economies and markets—even those that are inherently challenging due to the fact that they are largely undeveloped, unknown, unexplored, and unconventional.

**STEP 3: EVALUATE THE PRODUCT (TECHNOLOGY) SOLUTION: *Is there potential for technology solutions that meet market needs?***

Industry confidence in the market opportunity is meaningless if the product the industry wants to push to market is inferior or does not meet a commercial market need. We asked ourselves the following questions: Is the technology solution superior to what is already available on the market (i.e., is it more affordable, better designed, more efficient, and a proposition that adds value)? Why are there no commercial markets already in existence? Recognizing that even the best market transformation interventions will fail if the technology solution is poor, unvalued, or economically untenable for consumers to acquire (and thus not able to generate sufficient demand in the market), it became critical for us to understand why off-grid lighting solutions introduced in the past have failed to gain significant market entry, and to delineate why the new technologies aren't likely to follow the same negative trajectory.

In the case of modern off-grid lighting devices, one of the defining factors differentiating the innovations of the past and the commercial solutions available today is the market's ability to deliver a range of lighting options at varying price points, tailored to consumer need and purchasing power. The solar home systems introduced in the past, for example, were never able to earn widespread adoption in BoP populations, largely because pricing was misaligned with the purchasing power of these segments. However, recent advances in lighting technology, such as those related to the improvements of light-emitting diodes (LEDs), have lowered power requirements, enabling the development of smaller, less costly, stand-alone portable solar lighting devices that are able to overcome the initial cost barriers.

**STEP 4: IDENTIFY MARKET BARRIERS IN THE CONTEXT OF THE EMERGING MARKETPLACE. *Why can't the private sector develop the market on its own?***

The basic philosophy of a market transformation approach rests on the notion that the market is not delivering up to its potential due to a common set of barriers preventing the industry from taking full advantage of the market opportunity. The risk and transaction costs of overcoming these barriers are unattractive for any firm to overcome on its own, and they are further amplified by the fact that the business environment in the developing world has its own rules and playing field. Through extensive industry consultation (described in detail below), the project team identified a number of market barriers, based on the specific conditions of the off-grid lighting market in Africa, that were preventing the international lighting industry from gaining sufficient confidence to go after this huge unmet market opportunity.

***2) Consult extensively with the industry to identify key market barriers (as identified by the industry) that will serve as the basis for project design.***

From the beginning of the scoping work to the official launch of the Lighting Africa program, more than two years passed. Apart from consultations about market barriers, we took this time to bring companies on board to gain assurance in the market opportunity, provide them with market intelligence to substantiate market claims with

data, and help them start to develop new products and business models for the BoP markets in Africa. Much of this time was spent in extensive consultations with the international off-grid lighting industry in order to determine what role IFC ought to play—and how—in improving market conditions for private-sector development. Consultations involved more than 24 months of discussions with 50 international lighting companies, and over 70 meetings with local stakeholders in countries where there was a potential for implementation. Some 142 private companies and 56 stakeholders expressed interest in participating in the program, and the consultations revealed that private-sector interest in market development existed, but perceived risks and costs outweighed the desire for market penetration.

Of the laundry list of barriers identified by the industry, the five exhibiting the strongest potential to bar the industry from market entry and best aligned with IFC’s vision and strategic objectives became the basis of the program. The program’s design was built entirely on providing targeted interventions to remove specific market barriers, as identified by and with the industry. The key take-home lesson: “To confirm if there is real market potential and determine how IFC may support its realization, if you are not sure how to design a market transformation project, ask the industry.”

### 3) Design your project to identify and respond to changing market conditions and business needs.

One of our earliest indications of program success can be measured by the influx of off-grid lighting products designed specifically for BoP markets in Africa. Since 2008, the number of products manufactured for the off-grid lighting market in Africa has grown from less than eight product types to more than 70, exhibiting a range of quality (some very poor) and manufactured by 49 firms. The rapid growth of the market highlights the importance of establishing the capacity to monitor and manage market transitions and design program activities so as to be able to respond to a high-growth market scenario. Lighting Africa is designed to be dynamic and rapidly adaptive to changing market

conditions—under the assumption that market and industry evolution will challenge us to continuously reevaluate and, at times, redefine program activities and timelines to correspond with budding market need.

To enable this nimbleness and follow the latest happenings of the industry and market, we have established local advisory committees in the pilot implementation countries (Kenya and Ghana) and a newly established International Off-Grid Lighting Stakeholder Association in order to provide a frequency to channel information between the industry, the various stakeholders, and the project team and build a sustainable commercial platform for market development. In addition, the Lighting Africa Web site ([www.lightingafrica.org](http://www.lightingafrica.org)), a social media platform, acts as a virtual home for the industry and supports efficient flows of information, including timely information about general market developments, trends, and market gaps that the Lighting Africa program can play a role in filling (such as flagging product-quality issues), leading the program to plant seeds to launch a massive consumer education campaign.

## Conclusion

In the process of assessing and designing the Lighting Africa program, we can draw a number of useful lessons that will have applicability for other teams looking to create market transformation programs. Once you have identified a potentially beneficial and commercially sustainable market opportunity, extensive consultations with the industry and a comprehensive barriers analysis can point the way to a market transformation approach that could accelerate market development. Finally, especially in low-income markets, where cash is restrained, it is important to understand why markets haven’t already been developed around the technology, and to ensure that the market solutions will align with consumer demand and BoP economics. The industry will play a critical role in helping you design your program around the market barriers they identify, and it will be key to build feedback mechanisms into your program to keep close partnerships with the industry in order to keep in step with changing market dynamics and to best respond to evolving market needs.

Market Barrier	Lighting Africa Program Response
High Transaction Costs to Understand the Market; Lack of Understanding of Consumer Needs/Preferences	Market Intelligence
Inability to Make Informed Purchasing Decisions and Decipher Quality in the Market	Product Quality Assurance
Lack of Access to Available Consumer, Trade, Working, and Growth Capital	Access to Finance
Lack of Access to Partners, Business Networks, Business Models, Business Plan Support	Business Support Services
Policy and Regulatory Impediments (e.g. Import Duties, Customs Issues, Subsidies)	Policy and Public Sector Operations



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