

# ONE WATT AT A TIME: THE RISE OF SOLAR LIGHTING IN RURAL KENYA

**Author: Jechoniah Kitala**  
**Country: Kenya**  
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In Kenya only about 20% of the population has access to grid electricity connection. In rural areas where 80% of the population lives, less than 5% have access to electricity. About 40% of the rural population use the tin lamp, popularly called Koroboi or nishikie nitandike- a Swahili slogan that means "hold for me as I make the bed", a name indicative of the dangers and hassles associated with the use of the lamp. Another 40% uses the relatively "advanced" kerosene lantern. But kerosene for lighting comes at a price – socially and economically. Emissions are notorious for causing respiratory diseases and increasing the carbon foot print. The cost of kerosene burdens the population whose income is also little. In other cases, tin-lamps have been associated with major fire catastrophies. The light from the wick is also too weak causing strain and sight problems. Yet, despite its ready availability, solar is only used by less than 3%<sup>1</sup> of the population for lighting. This low uptake is attributed to inadequate awareness, affordability and accessibility of appropriate solar lighting solutions especially for the bottom of the pyramid (BoP). This prompted SNV to venture into solar energy in an effort to develop a long lasting solution for the millions of Kenyan rural households who every day suffer the consequences of using unclean lighting.



In 2010 when SNV ventured into solar lighting, there were several good quality products introduced into the market through companies associated with the IFC supported Lighting Africa programme in Kenya. These companies that are mostly based in Nairobi, the capital city, were struggling to build distribution channels to the rural areas using a few young distributors, retailers and often NGOs. The products were being sold with little or no after sales service and many potential consumers could not afford the lamps as the cost was many times the daily expenditure on kerosene. As a result the products often did not reach beyond the main urban areas. The huge customer base in the rural and peri urban areas was not served. SNV therefore came in to increase access to and use of modern lighting for households at the BoP by establishing and strengthening sustainable and commercially viable supply and distribution models for quality PicoPV (1 – 10 W) products & services. The key partners in the project are GIZ (implementing partner), IFC Lighting Africa programme (quality control), solar suppliers, distributors and retailers (Last Mile Entrepreneurs).



<sup>1</sup> As of 2010 when the SNV intervention was starting. This is estimated to have since improved to close to 10 % thanks to SNV's and other partners interventions.

## CONTEXT

## CLIENTS

## METHOD / SNV INTERVENTION

SNV set out to build innovative distribution channels to the BoP. In doing this SNV utilised its networks in agricultural value chains, WASH and biogas programs. The aim of the intervention was to help the private sector to penetrate deep into the rural areas and serve the last mile in a cost-effective way that would still keep the products affordable to the poor. There are four main activities: awareness creation, strengthening entrepreneur, business linkages and facilitating access to finance. Awareness creation involved the use of mass communication channels such as road shows and media. This was necessary to create the “hype” needed to sensitise masses. This is, however, not adequate to lead to behavior change and adoption. It was therefore followed by other awareness strategies targeting specific communities and consumer groups such as women groups, plantation workers and farmers. Different stakeholder groups at county level were also targeted in collaboration with government departments. This was mostly through exhibiting solar lanterns during agricultural shows and field days. This activity was coupled with the identification of rural distributors and retailers. About 150 of these were selected and taken through solar business development training that included both product knowledge selling skills. The business linkages support included SNV linking the entrepreneurs with the suppliers of different products and also organising match making events at the local level where suppliers could make business deals with the entrepreneurs and also meet potential customers. SNV has also facilitated linkages with tens of rural savings and credit cooperatives (SACCOs) which have proved very useful for providing the relatively small consumer loans required for purchase of solar lamps. In addition some of the SACCOs have also become points of sale for the solar products to facilitate easy access for their members.

## OUTCOME

Through this intervention, SNV prides itself in having catalysed the growth of an emerging market and whose current growth rate is estimated at 85-115% per annum. In this SNV has contributed to the strengthening of entrepreneurial capacity to support solar distribution to the last mile. This capacity has been created in the network of over 150 last mile entrepreneurs, 10 rural distributors, several SACCOs and village banks. SNV now has strong footprints in 10 countries covering a substantial part of the Kenyan population.



By inculcating knowledge about good quality solar products coupled with business skills, this has improved the level of awareness and availability of good solar lamps in the countries where the project is operating. This has helped in improving access to quality lighting for off-grid communities in rural Kenya. The solar value chain is also becoming more vibrant as a result of the improved business linkages. This is reflected in terms of better flow of products from the suppliers to the rural distributors and last mile entrepreneurs. The number of new Lighting Africa approved products entering the market is also increasing. To date about 14 products are on offer from different suppliers. Especially notable is the growth of the solar home system segments as customers seek to acquire the relatively bigger products that provide more service options beyond lighting including mobile phone charging and powering small radios.

## IMPACT

Through the project over 30,000 solar lanterns and solar home systems have been distributed contributing to access to clean lighting for over 150,000 persons<sup>2</sup> in the last 2½ years. In addition the distribution model has also created employment opportunities for over 150 people either as self employed last mile entrepreneurs or as employees and commission agents of the rural distributors. The critical success factors include ability to leverage on SNV

networks in agriculture, WASH and biogas. This enabled the renewable energy team to easily link with grass root structures to support last mile distribution. Coupled with this is the vibrant private sector in Kenya that easily embraced the opportunity to trade in solar lanterns as a means of generating additional incomes. The ability to leverage on local partnerships for awareness creation and entrepreneur capacity building also enabled SNV to extent its tentacles and reach more communities cost effectively.



There are several lessons learnt in this project:

First, the target market is a largely rural market which has its own unique socio-economic dynamics. In view of this, entrepreneurs need to be ready to synchronise their sales plans with or seasonal incomes, be ready to penetrate the interior and innovate payment systems in line with cash flow regimes of each.

Secondly, the pico pv solar market is largely a doubtful market that requires building confidence through first motivating the consumer to take action (eg linking to a financial service) and also ensuring after sales service. Dissatisfied customers pose a major threat of market spoilage. Thirdly, adoption of RETs is a systematic process involving awareness (knowledge), persuasion and trial implementation starting with entry-level products. This calls for careful packaging of the solar products to include user education as an integral part of the intervention. Fourthly, the backbone of this model is a strong private sector. It can therefore only succeed if entrepreneurs aggressively pursue the business opportunity and are able to innovate and overcome market barriers. The best way to ensure the right entrepreneurs are on board is through a competitive selection process coupled with a demand driven capacity building trajectory. This makes the entrepreneurs to remain motivated and be accountable for the mutually agreed results.

Despite the encouraging results, it is evident that awareness levels are still low. Even with a vibrant private sector, it is very costly for the private sector to reach the masses with information. Development funds and risk capital are required.

Finally, even with the clear economic benefits of using solar lanterns as compared to kerosene, Portable Solar Lanterns still represent a fairly large up-front investment for the poor who are currently using kerosene/wood fuel. This calls for innovative/flexible payment systems consistent with the BoP's irregular cash flows. It also underscores the importance of financial linkages for both consumers and last mile entrepreneurs.

*"The people working on the ground like SNV are likely to get to the solutions before we in d.light get it. Please share with us..."* **Dave Small, MD D.light Africa**

*"Entrepreneurs should not just be seen as price takers who merely increase the end consumer price.... But an entity that creates value in terms of efficient distribution, consumer education and after sales service and for which we take a margin"* **Joyce Gema, Rural distributor**

*"Our success in improving market penetration in Kenya is a concerted effort of many stakeholders.... like SNV whom we have collaborated to reach thousands of households with clean lighting solutions"* **Nana Asamoah, Country Manager, IFC Lighting Africa, Nairobi**

*"Previously, I had only one business line. When SNV came in I was linked with*

## LESSONS LEARNED

## TESTIMONIALS

dealers like Barefoot Power and D.light. The training I received enabled me to improve my marketing and record keeping. I can also now tackle problems of end users better” **Samuel Chemweno, BCE/ Last Mile Entrepreneur Eldoret**

“I have the solar lantern and a bigger unit. I bought them at once when a supplier in the village introduced them to me. I use the lantern in the kitchen and the bulb one in the main house. Since I bought the systems, my life has changed a great deal. I no longer spend money on kerosene, so there are big savings. Besides, my children can study under a clean and brighter light. Initially, it was difficult for them to read because the light was dim and the lamp emitted a lot of smoke. At night we use the bulb as security light. We pull the cable to where the animals sleep. This has helped us scare off predators that were a perennial nuisance.” **Lilian, House wife Kajjado County**

“We are a dairy company and our clients are dairy farmers. When SNV introduced us to the solar units, we explained to our farmers who liked the idea. They pick the units on credit and we deduct the pay from the milk. They find this to be a friendly arrangement. The benefits they have reported to us include: ability to wake up early and milk the cows. This has allowed them to deliver the milk in good time. Their children too get some bright light to study under, while they have saved a lot on kerosene. We saw a significant increase in membership to our dairy company when farmers learnt that they can get the solar units on credit from us”. **Henry Maritim, Manager, LelChego Company LTD.**

## STANDARD DATA

1. Start and end date of contract: 1st July 2012-31st December 2014
2. Team numbers: 3 SNV staff; 6 LCBs and external consultants
3. Time investment:
  - i. Planned PPDs: 400: invested 534
  - ii. LCBNumber of PP-days Planned: 250, Already invested:565
  - iii. Consultancy days: 72
4. Relevant partnerships: Giz is also implementing the same model in other regions of Kenya
5. Financial resources invested: EUR 566,547
6. Client satisfaction and enhanced capacity scores