



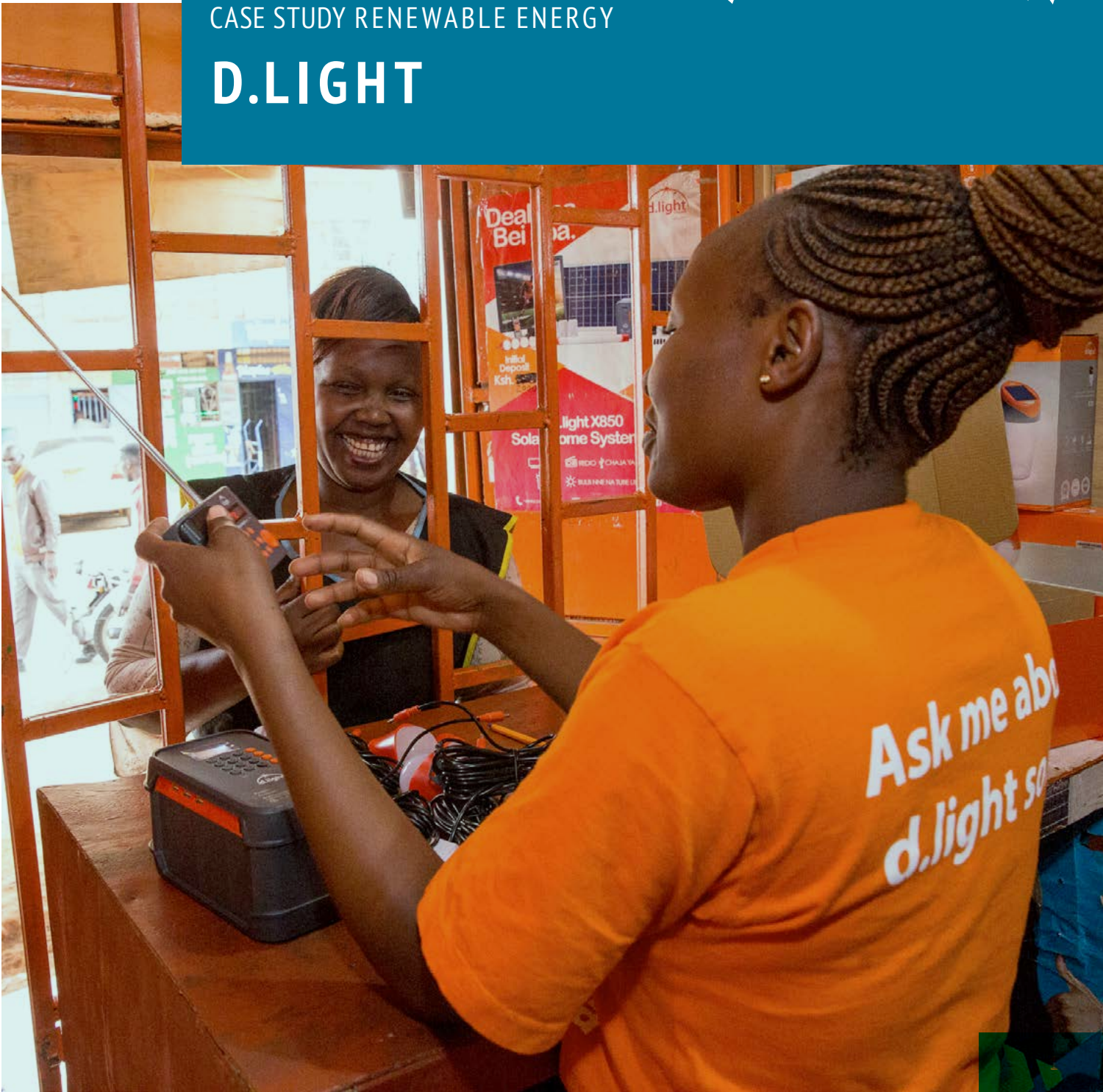
SIFEM

SWISS INVESTMENT FUND
FOR EMERGING MARKETS



CASE STUDY RENEWABLE ENERGY

D.LIGHT





D.LIGHT

BRINGING AFFORDABLE AND CLEAN ENERGY PRODUCTS TO UNDERSERVED HOUSEHOLDS

Location: Global, with HQ in Nairobi, Kenya, serving African growth markets

Sector: Renewable Energy

Fund name: Evolution II Fund

Fund Manager: Inspired Evolution

SIFEM investment into Fund: USD 10 million (2016)



> www.dlight.com

d.light is a global company selling off-grid solar light and power products to predominantly rural, low-income customers in 70 countries. These products include solar-powered lamps designed to replace kerosene lamps, bringing substantial benefits for health and well-being as well as reductions in carbon emissions. d.light has developed and implemented an innovative pay-as-you-go (PayGo) consumer financing model, which improves access to solar-powered electrical devices by allowing low-income households to pay them off in small instalments. As of October 2019, the company had sold well over 20 million products since its launch in 2008 and was on track to meet its target of improving the lives of an estimated 100 million people by 2020.

In 2016, SIFEM invested USD 10 million in Evolution II, a private equity fund focused on investments in clean energy infrastructure and resource efficiency. Evolution II's investment into d.light in 2018 has enabled the company to expand its PayGo consumer financing model in existing markets of Kenya, Uganda and Ethiopia and into new markets in Nigeria and Tanzania.

2018
Investment year



1500
employees

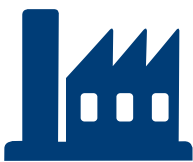




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2.4 m
tonnes of CO₂ avoided in 2018



59,000 MWh
of clean energy produced in 2018





THE NEED FOR ACCESS TO CLEAN, MODERN ENERGY

Sustainable Development Goal 7 calls for clean, sustainable and affordable energy for all, recognising that extensive energy poverty constrains lives and livelihoods and inhibits economic development. Nearly a billion people in the developing world – living mainly in rural and peri-urban areas – lack access to grid-based electricity. For lighting, many families rely on polluting, dangerous and expensive kerosene lamps. A major challenge is how to bring the benefits of electric lighting and power to low-income households in remote areas that are beyond the reach of cost-effective power grids. A promising development in recent years has been the rapid growth of off-grid solar energy solutions. While affordability for low-income households has until recently been a significant hurdle, d.light is at the forefront of a revolution in product and payment solutions that are transforming people's lives and contributing to the transition from fossil fuels to clean, renewable energy.

«In Kenya, there is no trouble recruiting employees with appropriate skills, and vacancies can usually be filled from within existing teams. Since it operates in a young industry, d.light does not insist on industry experience, but rather targets transferrable skills. Many employees have a background in the telecoms sector, which is very strong in Kenya. However, Ethiopia and Tanzania are more problematic when it comes to finding skilled staff.»

– PATRICK MENGO, D.LIGHT AFRICA SALES OPERATIONS DIRECTOR



D.LIGHT'S SOLAR SOLUTION

PROVIDING OFF-GRID SOLAR PRODUCTS

d.light's co-founders, Sam Goldman and Ned Tozun, were initially inspired to introduce solar-powered products that could phase out kerosene lamps. The company's mission – which is central to its business operations – is to transform lives by making high-quality clean energy products universally available and affordable. d.light's headquarters are in Nairobi, Kenya, with additional hubs in India, China and the United States.

d.light's approach to improving lives is based on the concept of an «energy ladder», meaning that products are tailored to different income levels. The entry-level products are very simple and relatively low cost individual solar lamps (costing between USD 4-15), which are designed to replace kerosene lamps in low-income households. At higher income levels, consumers can move up the energy ladder by purchasing more sophisticated solar products, such as more powerful lamps and torches with mobile phone charging capabilities (USD 15-35). The next level of products – targeted at people with higher incomes who have no access to grid electricity or face unreliable grids – are solar home systems (SHS) consisting of a solar panel, battery, control panel, phone chargers, several lights, a torch and a radio (USD 60-200).

An increasingly popular product is the X850 SHS (USD 340), which comes with an optional energy-efficient television (the package selling for about USD 560).

d.light sells its products mainly in rural and peri-urban areas, which are typically beyond the reach of electricity grids. Many customers – especially of lower cost solar lamps – are smallholder farmers, while customers who buy SHS include teachers, traders, middle managers and taxi drivers. The threshold income level for a SHS is around USD 300 per month. d.light's entry-level solar lamp (the A2 model) has sold the most units to date and still records the most unit sales per month, with 50,000 units sold per month in Kenya alone.

All products are manufactured in Shenzhen, China and are rigorously tested and certified by Lighting Global, a World Bank initiative to ensure quality standards for off-grid solar products. This certification strengthens the brand and instils confidence in the quality of products among consumers. d.light's ongoing process of product research, design and development (RD&D) is informed by reports submitted by manufacturers as well as the global design chief and product chief, resulting in regular product improvements.

PAY-AS-YOU-GO CONSUMER FINANCING

While the simpler, lower cost products are sold on a cash basis, d.light has developed an innovative pay-as-you-go (PayGo) model of consumer financing for sales of the SHS. When buying a SHS, a customer pays a deposit and commits to repaying the balance over a predefined period, typically between 9 and 18 months. d.light is committed to ensuring that customers purchase products that are within their means. Its sales agents are appropriately trained and carefully explain to each customer how the PayGo transaction works. Furthermore, each customer goes through a financial screening process with the sales agent and the local call centre, whereby the customer is assessed for their capability to pay – with the method varying by country, depending on the strength and reliability of the local credit reference bureau. When PayGo customers make a repayment, they receive a top-up code via SMS, which is entered into a controller keypad to enable the SHS. Once the credit expires, the SHS stops functioning until the next payment is made. In some countries, for example Kenya, customers use mobile phone payment platforms to purchase credits.

Should customers encounter difficulties making repayments, d.light staff contact them to enquire about the reasons for non-payment, which could be a lack of knowledge, financial difficulties or faulty products. d.light seeks to implement realistic payment plans to prevent over-indebtedness and retain customers. Once the product is fully paid off, the purchaser has full ownership and use of it.

A FLEXIBLE BUSINESS MODEL

In its Kenya operations, d.light has two principle 'routes to market'. The first is direct distribution via its own network of 15 regional hubs (Retail Distributors) and approximately 700 local «Exclusive Experience Centres», stores that sell only d.light branded products. From these Experience Centres, d.light distributes products through nearly 4,400 independent sales agents who work on a commission basis. The use of local agents ensures familiarity with potential customers, local languages and cultures, and reduces the need for transport.

The second route involves working with a variety of third-party distribution partners to sell cash products. These partners include over 200 retail distributors who supply to some 12,000 general retail stores across Kenya, which typically sell electrical, mobile phone and hardware products. d.light also partners with

microfinance institutions (MFIs), which buy cash products (e.g. solar lanterns) and then finance them to their customers. In Nigeria, d.light's leading partner is an MFI that has 400 branches with loan officers who earn a commission from selling d.light products. MFIs facilitate entry into new markets because they have an existing customer base consisting of their members. d.light's strategy is to enter new markets with cash products only, and then to add PayGo options once the brand and distribution network have been established.

EMPLOYMENT AND TRAINING

Globally, d.light has over 1500 employees, including 735 people employed directly on a full-time basis in Kenya. According to several employees, d.light's attractiveness as an employer stems from the strong story of social impact (the «feel-good factor»), its status as a small but growing company in a dynamic industry with new and positive challenges, and the opportunities it presents for employees to grow in their careers.

Training is conducted across all seven regions in Kenya, with one full-time trainer employed in each region. In addition, there are two trainers at the Nairobi headquarters who develop training modules. The sales agents are recruited locally and given



«I enjoy working for d.light because it allows me to grow my career, and also because we want to preserve our environment. We see that our clients can't afford electricity, and we are proud to be part of the d.light team offering affordable alternatives.»

– JOSEPH, D.LIGHT REGIONAL MANAGER, NAIROBI REGION



onboarding training by the seven regional trainers on direct sales techniques, profit stories from the Exclusive Experience Centres, new products as well as marketing techniques and consumer education. There is also a permanent training schedule in place, which includes two training sessions per month on products, company vision and mission, management and sales skills. The continuous provision of mentoring support helps to retain sales agents. External coaches are also engaged, including a motivational speaker.

SERVICES

d.light's in-house 'outbound' call centre in Nairobi deals with Paygo collections as well as sales; the telesales team contacts customers with new offers and encourages walk-ins to visit Experience Centres across Kenya's seven regions. There is also an 'inbound' call centre operated by a third-party contractor, which handles product queries, calls initiated by sales agents in the field in order to check customers' credit credentials and register them and their products, and customer complaints. This call centre also offers basic technical troubleshooting assistance.

d.light has developed a proprietary IT software platform called Atlas, which allows the company and its partners to manage all PayGo operations including activation/deactivation of SHS, payments, and reporting. The cloud-based system functions via the web and mobile phones, allowing partners to manage their sales and distribution businesses.

There are almost 100 Service Centres across Kenya to which customers can take defective products, which are repaired on site if possible. There are also 116 drop-off points from where products can be sent to the headquarters for troubleshooting and/or repair. A Technical Support Centre at the Nairobi headquarters provides technical advice to customers who experience problems with their products that cannot be solved by the regional Service Centres. Cases are referred by the inbound and outbound call centres, and about 5,000 cases are handled per month (out of several hundred thousand products).



DEVELOPMENT EFFECTS: IMPROVING LIVES AND LIVELIHOODS, AVOIDING CO₂

- **d.light's solar products help to improve customers' lives in various ways.** Those who replace kerosene lamps with solar lights have improved health and safety in their homes or workplaces, since indoor air pollution and the risk of fires is reduced. Products with mobile phone charging capabilities facilitate communication and enable people in remote areas to use mobile money platforms in countries where these are available. Solar lamps allow scholars to study at home at night and hence improve their educational performance. Many rural schools that are beyond the reach of grid electricity are using d.light products, boosting educational outcomes. Families who buy a SHS with a radio or television benefit not only from entertainment, but also from access to news and information – which is positive for democratic participation.
- **Replacing kerosene lamps with solar lights saves households money.** Given that a litre of kerosene costs USD 1 in Kenya (September 2019), a family can easily spend USD 0.38 per week on kerosene fuel per lamp they use (assuming three hours of use per day and a burn rate of 0.018 litres/hour). d.light's basic solar lamp sells for \$ 4, which means that a family recovers the cost within 11 weeks. The lamp has a one-year warranty but may last several years.
- **d.light products provide enhanced livelihood possibilities.** For example, small business operators – including farmers – use solar-powered lights at night to extend their business hours. Many enterprising owners of d.light products sell phone charging services, the alternative being costly charging at shopping centres. Others lease their lighting systems to people who need them for one-off night-time events, such as funerals. Improved access to light and power in the home also allows individuals to spend more time at work.
- **Solar lamps bring significant benefits for climate mitigation.** Based on a standard off-grid solar industry methodology, an estimated 2.4 million tonnes of CO₂e were avoided globally in 2018 from the use of d.light products. This is equivalent to the CO₂ emissions of 1.85 million cars each driven 10,000 kilometres in a year.



«My husband bought the solar home system with a TV. I used to use dirty kerosene lamps, now I have solar-powered lights in all four rooms in my house. My daughter has light to do her schoolwork at night. As a family we now enjoy entertainment from the TV and can watch the news.»

- RACHAEL, CUSTOMER LIVING NEAR MACHAKOS TOWN



CHALLENGES AND OPPORTUNITIES

While the off-grid solar market has grown rapidly in recent years, there are still numerous challenges in serving remote, low-income customers in underdeveloped markets. These conditions create risks and uncertainties, leading several companies to encounter financial difficulties. Newer markets present more challenging conditions. For example, Nigeria lacks widespread mobile payment systems, necessitating customers to sign on to a mobile money payment system integrated with d.light or to have pre-existing bank accounts that d.light can debit from in order to purchase a d.light product. Furthermore, while the affordability of products has improved, many are still beyond the reach of the poorest households. In addition, Africa lacks facilities for the recycling of e-waste from discarded products, necessitating shipments abroad. d.light has established itself as a market leader in Kenya, accounting for 52% of the Lighting Global quality verified off-grid solar market including both cash and PayGo products, and 30% of the PayGo market. The company will continue to offer both cash and PayGo products, although the emphasis has gradually shifted towards the latter, especially as incomes rise in the target markets.

d.light continues to refine its strategy and is exporting the successful Kenyan business model to other countries, where it is scaling up distribution networks. Through its expanding range of products, d.light aims to continue enhancing the quality of life of its customers. The company is making an important contribution towards the fulfilment of SDGs 7 (affordable and clean energy) and 13 (climate action), thereby illustrating the synergies between poverty alleviation and environmental protection.

«I have been using a two-bulb product since 2014 and the lighting is good, with better quality than others I have seen. The battery charges my phone fast. I would buy it again even tomorrow. Now I want to buy a solar home system with lights for my mother, who was using dirty kerosene lamps. My mom will be very happy to have a TV.»

– CUSTOMER IN MACHAKOS TOWN



EVOLUTION II FUND

Evolution II is a private equity fund focused on investments in clean energy infrastructure and resource efficiency in Sub-Saharan Africa. The Fund provides financial backing to innovative growth-stage companies that are at the forefront of the renewable energy revolution in Africa. The Fund Manager, Inspired Evolution, was attracted to invest in d.light because of its compelling social and environmental impact thesis and the direct impacts on people's lives, alongside a strong commercial track record and prospects. The partnership with Evolution II has enabled d.light to further develop and significantly scale up its PayGo consumer financing model in Africa. It has enabled d.light to expand geographically in Africa, bringing the PayGo products to market in Tanzania and Nigeria, as well as supported the company to expand its PayGo product line, including the addition of an entry-level solar home system. Furthermore, d.light was able to leverage the equity financing from Evolution II to bring on additional debt financing

to further accelerate the PayGo business. With PayGo seen as the major driver of future growth, Evolution II's investment helps to expand the availability of solar lights and electrical products where they are needed most – in homes across Africa that are currently beyond the reach of electricity grids.

In addition, Inspired Evolution – together with co-investors (FMO, Norfund and Swedfund) – drafted an Environmental, Social and Governance Action Plan (ESGAP) such that d.light could reach compliance and then the co-investors, together with the company, drafted a Value Creation Plan. The measures included the introduction of a new credit committee on the board as well as an independent board seat, both of which have generated more productive board meetings. Furthermore, the ESGAP addresses the issue of e-waste.

«Inspired Evolution has brought good governance practices in as an investor. The value creation plans we agreed with Inspired Evolution at investment are helpful for d.light to be putting in place at our size and scale, and make the board more impactful.»

– NED TOZUN CEO & FOUNDER

ABOUT SIFEM

The Swiss Investment Fund for Emerging Markets (SIFEM) is the Swiss development finance institution. It is owned by the Swiss Government and is an integral part of the instruments of economic development cooperation. SIFEM is specialized in providing long-term financing through local funds and financial institutions to small and medium-sized enterprises and other fast-growing companies in developing and emerging countries, focusing on the priority countries of Switzerland's development cooperation. This helps to create and secure more and better jobs and reduce poverty while also contributing towards the integration of these countries into the global economic system.

ABOUT OBVIAM

Obviam is an independent investment advisor specialised in long-term investments in emerging and frontier markets. Obviam advises public, institutional, and private clients, including the Swiss Investment Fund for Emerging Markets (SIFEM), the Development Finance Institution (DFI) of the Swiss Confederation. Obviam offers investors an opportunity to capture attractive returns and generate sustainable positive impact in emerging and frontier markets, via a proven and responsible investment approach.

Obviam has made reasonable efforts to ensure the accuracy of the data presented. A case study is made possible both through Obviam's first-hand experience and/or the information provided by Obviam's investment partners. The data in this case study is valid as per 2019.

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