



cutting through complexity

PAYGO: Solar distribution through pay as you go business models in East Africa

Development in practice
Impact Paper 16

INTERNATIONAL DEVELOPMENT ADVISORY SERVICES (IDAS AFRICA)





photo © M - KOPA Solar

PAYGO: Solar distribution through pay as you go business models in East Africa

Africa is a continent of one billion people. In 2013 the continent was home to 11 of the top 20 fastest growing economies in the world. Yet 700 million people do not have access to power. A recent report by the International Energy Agency (2014) states that at current electrification rates, by year 2040, 950 million people in Africa will have electricity, but half a billion people, mostly in rural areas, won't.

Up until recently, there have been no clear answers for how to reach those households. Over the years,

there have been many attempts, but the efforts have faced serious issues with expanding the grid to rural areas, bottlenecks around power generation, and long lead times that come with larger installations of power plants and grid extension.

However there is new hope, a new model for providing access to electricity – It is called Pay as you go-technology (PAYGO). In the last three years, existing technology such as photovoltaic panels, energy efficient LED lamps, mobile money, and GSM data transfer protocols,

have been combined in new efficient and affordable Solar Home Systems. These systems provide light, mobile charging, sometimes a radio, and in some cases also TV. The units can be used to run a business of mobile charging, or provide power enough for a small business on the roadside, increasing opening hours and improving security. Using mobile money, low-income customers can “pay-as-they-go”, sending small amounts every day, paying only for what they use that day.



This is one of a series of short pieces from KPMG IDAS Advisors designed to show the practical application of development experience. This piece has been written by Jesper Hornberg, Senior Advisor, with inputs from Helena McLeod, Director, Anjali Saini, Senior Advisor, IDAS, and Rachel Keeler, Impact & Innovation Manager. The series is edited by Julio Garrido-Mirapeix, Head of IDAS Africa.

Cover photo © Kate Holt / KPMG IDAS

The Africa Enterprise Challenge Fund (AECF)₁ has financed seven such PAYGO companies in East Africa over the last two years. As of the end of 2014, these companies have provided access to clean and affordable energy to 200,000 households in Kenya, Tanzania and Uganda. That represents about one million people. This is only the beginning, and companies like these will, with the right support and resources available, be able to trail blaze energy access into millions of households in Africa. We have also seen that several of the AECF grantees who initially did not use a PAYGO system have shifted over from a more traditional microfinance model to own their own credit facility in order to help their customers pay for their solar products over time₂.

The Business Models

The companies have developed different payment models, business models, and offer a range of system sizes. Some offer small systems for ownership that are sufficient for light, mobile charging, and small radios. These are priced in the region of \$150₃ to \$250₄ and are paid in small instalments over 12-18 months. Other companies have larger systems for ownership that will power also small business needs like a TV,

a small fridge, or commercial mobile charging. These are more expensive and are priced \$450-\$1000₅. These are paid over 24-36 months. Other companies have started offering the customers a utility based payment, where customers only pay for what they use, without ever owning the systems that are in their houses. It is too early to say which business model will win in the long run, if any, and it is likely that it will be a mix in the market place.



Key success factors that have been identified include:

1. Access to large quantities of working capital
2. A strong management information system (MIS)
3. Strong and hands on sales and distribution
4. A senior and experienced management team

-
1. The AECF is a challenge fund hosted by the Alliance for A Green Revolution in Africa, and is funded by UKAID, Sida, Danida, IFAD, Australian Aid, and the Kingdom of Netherlands. For more information, see <http://aecfafrica.org>. The Fund Manager of the AECF is KPMG International Development Advisory Services Africa (IDAS), see <http://www.kpmg.com/das>
 2. BBOX, SunTransfer, Fenix International
 3. Fenix International, Azuri Technologies.
 4. M-KOPA Solar, SunTransfer Kenya
 5. BBOX, Mobisol.

Last mile distribution remains a major challenge, but with the PAYGO technology the cost of distribution and following up has come down drastically. This also applies to the payment recovery, which is crucial in order to make this scalable. If a customer does not pay, the companies can remotely switch the unit off. The units can also be tracked down using GPS coordinates which are transmitted over the GSM network.

In competition with companies that are providing their products on credit, but without the technological characteristics of a pay-as-you-go offer, the advantages of PAYGO solar are obvious. Increased possibilities to offer credit coupled with low transaction costs through incremental payments makes for a more competitive model.

Overall, this emerging business model has a significant potential to change the lives of poor people in rural Africa. The technology is being tested and together with a powerful MIS, the main pieces of the model are in place. Now the companies are showing how to handle the operational and financial part of running businesses where customers pay in small instalments and where covering the full costs are 12-36 months away. As with the technological and information innovation that made the business model come to this point, the risks of cash flow and working capital constraints the companies are facing need to be met by their own financial innovations in order to take the business model further.

Impact on households

This PAYGO technology lowers the threshold for poor households, allowing them to benefit from cheaper and more useful energy in the home. This has a positive impact on family finances, improves children's grades in school, prevents health dangers associated with kerosene lamps, and makes the environment feel more secure.

The prices for accessing daily electricity are set equal or lower than the equivalent price for kerosene and this brings down the cost of using new technology immediately. It also makes it risk free for the households, a major obstacle for effecting change in a rural setting in Africa.



photo © Kate Holt / KPMG IDAS



photo © Kate Holt / KPMG IDAS

The households and the company build a relationship, and market needs are better communicated to the companies. These could include changes to the actual units, but could also lead to additional innovation that can improve the household situation, such as stoves, cooling technology, biogas monitoring, and so on. Some companies are already bringing this into the mix.

Why risk capital – grant funding is so important

The funding provided to the grantees by AECF has had both direct and indirect consequences. The main utilization of the funds has been for product development, either of the actual product or of the company's MIS. Expanding the distribution structure is also costly, especially since this is a market without any clear and functioning distribution channels.

The perception of risk when investing in any company in Africa is high. An indirect consequence of the

funding is that the perceived risk comes down, and other commercial lenders and investors are more willing to come in as investors. At the AECF we have seen the portfolio of PAYGO companies being able to leverage the funding from the AECF 5-20 times over, translating into in total investments and credit facilities up to a value of \$20M per company being made available during 2014 alone⁶.

6. M-KOPA Solar, Mobisol, BBOXX, and OffGridElectric alone have raised \$40M in working capital debt from various debt providers during 2014 alone, with much more under negotiation.

Contact us

Jesper Hornberg

Associate Director, International Development Advisory Services (IDAS)

T +254 (0) 20 280 6000

E: jhornberg@kpmg.co.ke

<http://www.kpmg.com/das>

The information contained herein is of a general nature and is not intended to address the circumstances of any particular individual or entity. Although we endeavour to provide accurate and timely information, there can be no guarantee that such information is accurate as of the date it is received or that it will continue to be accurate in the future. No one should act on such information without appropriate professional advice after a thorough examination of the particular situation. KPMG and the KPMG logo are registered trademarks of KPMG International Cooperative ("KPMG International"), a Swiss entity.

© 2015 KPMG Kenya, a registered partnership and a member firm of the KPMG network of independent member firms affiliated with KPMG International Cooperative ("KPMG International"), a Swiss entity. All rights reserved.

 kpmg.com/das

 [@KPMGEastAfrica](https://twitter.com/KPMGEastAfrica)