Can Off-Grid Energy Turn On The Developing World?

Sometimes, we just get owned by the developing world. It makes us look like backward fools. Take M-Pesa, for example – which pretty much runs the Kenyan economy. It's now a decade old. With tens of millions of users, it shames our own uptake of mobile money.

The same is true of other technology areas, too. Instead of crawling through the various stages of technology development, the developing world jumps straight to adoption of the latest iteration. It's a process called "leapfrogging". Mobile phones represent a great example of this strategy. When have you ever seen a picture of a rural African using a landline? Me neither…

So what about power?

The developing world is going to teach us a lesson here, too. Over 1.4 billion people are living without access to electricity – mostly the rural poor. Development is catching up with these people. But they're not going to be building 20th century power grids – with their huge, centralised power stations.

Their future is based on a much more modern approach: renewables and storage. Off-grid energy companies are emerging to profit from this new energy economy. If you like to make cash while doing good, you can't do much better than giving people access to power. It unlocks much of what we take for granted in the West: refrigeration, internet access, piped water and lighting. Imagine trying to pull yourself out of poverty, if you didn't have any of that.

Today, I'm going to be interviewing Joe Segal. He is the business development manager of BBOXX, a market leader in this space. BBOXX aims to provide the on-grid experience to off-grid households –with a target of providing electricity for 20 million people by 2020. Offering customers lighting, phone charging and TVs from as little as 5 USD per month, BBOXX is rapidly growing in East Africa – as well as expanding to new markets through partners.

I originally met up with BBOXX at the Great British Private Investor Summit – which is happening on 25 May this year.

AL: Hi Joe. Can you start off by telling me a bit about BBOXX?

JS: BBOXX has been around for almost seven years now, and has grown rapidly. It was started by three Imperial College grads. They saw a need for an affordable, sustainable energy solution for off-grid households. This has developed into providing pay-as-you-go energy to hundreds of thousands of people across developing markets.

AL: How do your customers receive this energy?

JS: BBOXX uses a solar system to provide all the energy needs of the house. This includes lights and accessories – and a battery to ensure energy is available overnight, and on cloudy days.

AL: How can your customers afford this bling tech?

JS: Even when earnings are low, everyone spends money on energy – whether that's kerosene lanterns, batteries for torches, or phone charging booths. When these services aren't available locally, transport costs have to be added in. This adds up to around 10 USD per month for each household.

AL: Ok, so you're basically a competitor to very expensive forms of energy – things like disposable batteries?

JS: Yes. BBOXX saw these inefficiencies. We realised that if we offered a better system, but at the same monthly price, then the affordability issue is overcome. So three years ago, we started to offer payment plans to customers. These allow them to purchase a product over several years. This allowed us to reach the appropriate price point, while still providing a vastly superior service.

AL: What if your system breaks or stops working? Do users have to keep paying?

JS: No. If anything that fails during the payment plan, we fix or replace it. For example, if a light stops working, we provide an immediate replacement.

AL: Can you predict component failures, to minimise downtime? I imagine some of your customers are both hard to

reach, and highly dependent on your services.

JS: Yes, we can actually see if something is going to fail before it does. We have a proprietary remote monitoring system. This allows us to learn how the product performs, and how it's being used. We improve product lifetime by pushing over-the-air updates. This means we can provide exceptional customer service: we alert the customer and fix an issue before it occurs.

AL: You explained that you use a pay-as-you-go model. What happens if customers don't pay?

JS: That's the other side to our remote monitoring – we can disable the system. If they miss a payment, the system turns off. As soon as they pay again, the system is enabled and they can use it. All of this interaction is incredibly quick – switch-on can happen in under five minutes. It's also easy to use. Customers don't need to enter a code, or go outside – they just send the payments. This is a key part of providing an on-grid experience – but without the grid.

AL: What do you mean by an "on-grid experience"?

JS: We want customers to have access to the same experience and service as if they were connected to the power grid. In practice, we actually aim to provide a better service – particularly as regards payments. We make the finances particularly easy – offering access to all our appliances using an affordable payment plan. In Rwanda and Kenya, our systems don't have unpredictable power cuts. Under this model, the demand is huge; we are selling over 5,000 units per month.

AL: What's limiting your expansion to other countries?

JS: Financing! We pay when we manufacture, and recover our investment over months. The sector is becoming a victim of its own success. There are exponentially-increasingly financing needs as the companies grow. While capital may be available, the sector is young. The challenge is all about convincing investors that the market is sustainable.

To get over this challenge, BBOXX completed the first securitisation in off-grid energy access in the world. This means that we package and sell the customer contracts to investors, in exchange for cash up front. This allows us to shorten our working capital cycle to manage our growth. Our investors have also backed us – we closed a 20 million USD round in 2016. We are planning to close Series D by the end of the year – which will be larger than any previous round.

Growing quickly and expanding to new regions is expensive. We want to make sure we have the capital to do it well. Even though we get numerous emails from potential customers in new markets, we can't go everywhere at once. We now focus on Kenya and Rwanda. We're providing a full service to our customers, while satiating these markets as best as we can.

AL: You want to reach 20 million people. Are you planning to do that in your existing markets – or will you have to expand?

JS: There's definitely the potential to electrify 20 million people in these markets – but we are thinking bigger. We believe we have the best product around. We also have a great platform, which allows us to run the business efficiently. We've been doing this for years, and have iterated everything in the business into a neat solution. We have packaged it all up – and now we're partnering with other companies, to provide everything they need to start a business in new markets.

BBOXX is working with Orange Telecom and ENGIE (the world's largest energy company) in Cameroon. We have partners in Pakistan, and we will soon be starting in other new markets throughout the developing world. We aren't Africa focused, or Asia focused. It is all about being the market leader in off-grid energy.

AL: Doesn't this technology have wider usages than single-household systems? What about industrial or agricultural systems, and microgrids?

JS: We are working with numerous companies to use our remote monitoring and control technology in all sorts of different systems. Pumps, large systems, mini-grids, are all set up using our hardware and our platform. Providing the tools for financing, and great customer service, is at the core of what we do. In principle, it can be scaled up to much higher power levels. You just add more panels – and then all kind of possibilities are unlocked. Our technology makes all these use cases more affordable and accessible. We give companies a way to provide them on payment plans, while retaining control.

AL: 20 million customers is a huge responsibility. How will you ensure that your systems are reliable and secure – particularly against a major outage, or cyber-attack?

JS: BBOXX follow the same frameworks used in major financial organisations, to ensure our customers information is kept secure

and safe. The information we collect is limited in its sensitivity but we still ensure that it is fully encrypted and maintained on secure servers.

Our products are not all based off a single point of failure. Our products are isolated with VPNs [virtual private networks] and encryption on every product so brute force attacks would not affect large quantities. Our financial information is all held by large banking corporations and mobile money operators.

AL: What about the competition?

JS: Sure, there's competition – but it's not really like-for-like. Most people in the market are doing smaller systems. These only provide a few hours of energy a day, or power just a couple of lights. There are a few large systems – but these generally cost much more, while providing the same accessories and little extra benefit. We see ourselves as in the "sweet spot". Our pricing is attractive, and we have a wide product range. We are also focused on providing the best customer service: installation is included; maintenance is based on rapid swapping-out; and payment is simple and quick.

AL: More generally: what do you see as the future of the off-grid market? Surely at some point the grid will come?

JS: It doesn't look like this will happen. Even subsidised grid connections are anywhere from 100 to 800 USD per house. That doesn't make financial sense for the government subsidy, when the customer has no access to power-using accessories – and is therefore potentially using only a couple of dollars of energy a month. As the off-grid market expands into the gaps, governments will see them as credible solutions to the universal access goals as set out by the UN.

I think the future for the market really leads towards an expansion to all forms of energy and linking to existing infrastructure like the internet. One day, we may even look to provide storage and generation for the grid. Solar home systems will provide millions of people with electricity – people the grid will never reach. There will be an increase in the range of appliances used by customers. As efficiencies improve, costs will fall. Over the last few years we have seen huge drops in both cost and appliance energy consumption figures – especially for TVs and lights. This has allowed consumers to obtain better and bigger products, whilst enjoying price reductions.

AL: Which appliances are going to be game changers for the market?

JS: It's difficult to tell. I think the market will be changing dramatically but the affordability will probably remain a challenge. The focus will be on entertainment. Most of our customers may not want a fridge. Providing new ways to consume TV and other content could be key – so it may not even be appliance related, but content related.

I'd be delighted to hear your thoughts on this. Can off-grid solutions solve the energy needs of over a billion people? Or will the national energy networks expand into these regions? Please do write in with your views – andrew@southbankresearch.com.

Best,

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Exponential Investor