

Good Things Happen_Season Three
Episode 4: *Bringing Solar Power to African Communities*
Guests: Anish Thakkar & Eugene Amusin
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Jorian (00:11)

Welcome to Good Things Happen, a podcast series that shows the human side of banking. Today we'll hear the story of Sun King, an extraordinary company that's using its technology to positively impact millions of lives. I know that's a grand statement, but trust me, Sun King's story is a remarkable one, and I'm delighted to say that we have one of the founders of the business on today's podcast to share it. Anish Thakkar, co-founder of Sun King and his team are leading the transformation of how electricity is provided across Asia and Africa, where over one and a half billion people lack access to a reliable electrical grid, Sun King Solar Home systems power lights, mobile phones, radios, and other larger home appliances to transform the lives and businesses of its customers.

Joining Anish is Eugene Amusin, head of strategy and client solutions for Citi Social Finance. Eugene and his Citi team have developed a pioneering method to enable Sun King to provide millions of homes in sub-Saharan Africa with access to more reliable, sustainable and safer energy. So, before we explore this subject in more detail, let's hear our guests' stories. Anish, welcome. Please tell me the story of how you and your partner first met, because I think it was almost an accidental meeting and a very practical one at that.

Anish (01:42)

Sure. So, I met Patrick, my co-founder, 15 years ago when we were studying at the University of Illinois at Urbana-Champaign. And we met, as you said, quite coincidentally, late at night in a lab at our university's startup incubator, and I think it was maybe two in the morning. And I saw Patrick in the corner with bags under his eyes, a large beard, hair down to his shoulders, and he was hunched over a lab table, and he was hand building these devices. There was a pile of these things, and he was building one after another and there were these white tubes with wires sticking out.

And I think I walked over really more out of concern than anything, and I said, "Hey, are you alright? What are you doing?" And it turns out that he was building the first Sun King solar light prototypes, and he explained that he had to get on a plane the next morning to take 100 of these prototype solar lights to an off-grid village in Eastern India to test them in the market. And I just thought that was the greatest idea and ever since we've been working together.

Jorian (02:46):

I love that story. We'll come back to continue it in just a moment. How about you, Eugene? Tell us your story, were you always destined for a job in a bank? I think you've been with Citi quite a while now, right?

Eugene (02:57):

Yes, it's been a while, but it certainly hasn't been a linear journey at all. I was born in the Soviet Union and when I was a child, my family immigrated to the US and we arrived as refugees and I grew up in Brooklyn, New York in what I can only describe as a very immigrant, scrappy upbringing, and by the time I went to college, it was preordained of my future career path, which was really going to be a computer scientist or a programmer. My parents, my older sister at the time were all computer programmers, which was the thing in the '90s. And when I started at Citi 20 years ago, that actually was my first role was a software engineer.

At some point I looked back and I thought, well, from the perspective of stability of a paycheck, just how lucky I was to have had the opportunities that I've had to get to the place that I had gotten at the time. And also then the awareness that so many people around the world just don't have those same opportunities. And that recognition and awareness directly led me to this work that we now call social

finance, particularly focused on emerging markets, really with the idea of giving opportunity and expanding our access of opportunity to many people around the world.

Jorian (04:11):

Brilliant. I'm going to jump back Anish, to this moment in the incubator, as you call it. I love the way you say he was working on the first Sun King product, as if that was preordained. I get the impression that what really joined you was the sense of purpose. Tell us about that.

Anish (04:29):

That's right. You know, I knew as a student that I wanted to do something that had a bigger purpose than designing a mobile phone or a computer or the next Silicon Valley gadget. But really, when I met Patrick in that lab, what brought us together was chance. We were both working on some entrepreneurial projects in that lab. And what I saw in what he was doing was just the opportunity to take some engineering knowledge, but really just a lot of hard work and interest in doing good in the world and turn that into an organization that could scale to millions of people.

Jorian (05:01):

So, take the story from there. Tell us about Sun King? What is the idea, what is the purpose?

Anish (05:05):

So, Sun King is the largest provider of solar power for homes that live off the reliable electric grid. So today, 100 million people use Sun King for power and light in over 30 countries. We focus on Sub-Saharan Africa and Asia. And what we focus on is over a billion people that still live off the reliable electric grid. Either the grid has never shown up in their town, in their village, or even if the power lines pass over their home, they don't have a connection. Or if there's a connection, it's off for more hours than it's on. Maybe it's on for an hour a day or it's on for a day in a month. And effectively, homes are in the dark when the sun goes down. And so, what Sun King does is provide affordable and reliable solar power for off-grid homes.

Jorian (05:44):

So, Eugene, let's bring you into this story. From a Citi Social Finance point of view, how do you find companies like Sun King and give us a broader sense of the work that Citi Social Finance does and how it helps?

Eugene (05:59):

Yeah, thanks for that, Jorian. It's been a journey for us, and I think one thing that we recognize is that the emerging markets, as we know them, they're growing, but it doesn't necessarily mean that it's inclusive type of growth. And we also know the low-income communities are the ones that tend to lag behind in growth. And when there are sharks, they're the ones who are most vulnerable to sharks. And we see this manifested through limited access to, you could say, dot, dot, dot, limited access to energy, limited access to education for the kids, limited access to healthcare, housing, the list can go on.

Our first experience was actually microfinance and working with microfinance institutions. And what microfinance, which started in the 1970s preceding things like off-grid solar, but what it had demonstrated you could deliver a product at scale to a population that previously did not have access to it. And just because that household now had access to microcredit or a place to save money because there was a microfinance branch down the road, that same household still lacked access to many of these basic things.

And Sun King and others like them have really done the job of delivering those other basic services. Energy access is so fundamental to enabling many of these other components, including education. That's really been our journey. And the idea is really to think about focusing on those companies that are innovating in this space. A lot of it is underpinned by technology development enabling that last mile

reach to be more efficient, to be more designed around the needs of the end consumer and customer and that works so far.

Anish (07:36)

We see our mission as, one, it's to provide affordable solar power for all off-grid homes everywhere, but to achieve that we really have to do some pretty fundamentally boring things if we can make this activity as boring and repeatable as possible that's when we can succeed at scale. And so, Sun King, really there's three pillars, and the first is the technology. When we were coming out of that startup technology lab, that was the focus of Sun King, was how do we make a solar product that really works for an off-grid home? And this is going back 15 years. What we were looking at was the basic Nokia brick phone that can be produced at incredibly high scale and sold for as low as \$20, so affordable to virtually every household. And it's driven fundamentally by miniaturization of electronics, the advancement in battery technologies.

So, over the last 15 years, we see that the cost per watt hour of battery storage has come down and down and down. But combining that with the cost of solar panels, which have been on this 30, 40, 50-year trajectory down in affordability and the efficiency of LEDs that have been getting more and more efficient every year. So, you combine all three of these basic technologies, you can make a great device that provides solar power for off-grid homes, how they need it. So that was the first pillar. But once we had those products, there's still many challenges. So, our typical solar home system is a solar panel that's about as big as a shoebox and it goes on a roof.

It's battery storage that's mounted inside the home and then it's wiring. So, we wire each room with wall switches and lights, and then we have device power, so you can plug in your phone and charge it or a radio or a television or a fan maybe in the future, a water pump, it's a pretty basic system. So, our flagship solar home system cost about \$120 and most off-grid homes spend about \$100 a year on kerosene for light and on phone charging fees if they don't have any power in the house. So, this is a product that has a breakeven of about one year, but still the challenge is affordability. So, the first pillar for us was the technology. The second was how do we get this thing to off-grid homes? And so, we've built this really large distribution network. So today, we have 350 branches across nine countries.

We have 20,000 field agents, half of them are women, these are members of their community, virtually all live in a home that's off the grid and they use Sun King for power themselves. And then they introduce the product to their neighbors. They make it easy for an off-grid home to trust this new technology because they say, "I'm like you. You know me, I know you and I use this thing, it works, and I can vouch for it." But the other challenge then is the affordability that it's still very hard. Even though the products pay for themselves over the course of about a year, it's hard for many off-grid homes to save to be able to buy it upfront and so this third pillar is the financing. And so really over the last seven years, the focus of the business has been how do we extend purchase financing in a really broad scale to off-grid homes everywhere?

And the way we do that is with something called Pay As You Go. And so the way Pay As You Go works is that we have IOT technology on each product. When one of our agents finds a home that wants to bring solar in their house, instead of having to spend the whole price of the product upfront, a family spends about \$10. And we install the system in the house, and we activate it with a payment plan. And the payment plan works pretty much like prepaid cell phone service works hundreds of millions of people that use prepaid cell phones across Africa. And the idea is that pre-charge it, say for a week of service, and then you have a week of balance on your system, and then you get energy output for the next one week. And by the end of the week, you're out of balance, make your next payment for a week, and then you top it up and you get light for the next week.

And so, you make your payments throughout the course of the year until you've paid off the value of the system that's unlocked and you own it for life. And so really, it's been these three pillars. So first the technology, the second, the last mile distribution, effort to get out to off-grid homes in a way that they trust and we can explain the product and we can also install it and service it through agents. And then the third is this financing that enables virtually every off-grid home to be able to afford solar just from the savings that they experience week on week.

Jorian (11:14):

Got you. Eugene, enter stage right Citi Social Finance. So, when you first met the guys at Sun King, what was it they were looking at from you and your team and how did you help?

Eugene (11:28):

Yeah, thanks. And maybe just as a starting point to reflect on what Anish just described, and I think for Anish it's quite natural to say, "Well, these are just three components of the business. We essentially design, manufacture, do last mile distribution and financing." That's not ordinary, certainly not in more developed markets, but in emerging markets where the ecosystems for partnership are not as developed, it's almost this vertical integration by necessity. So, if you want to be able to sell last mile, you have to be able to finance it as well. And that really innovative approach and business model innovation has implications on your finances and how those can be managed. And when Anish talks about financing the end product, that makes the Sun King company almost look like a finance company, but at the same time they're selling product as well.

When we think about financing companies, there is a continual need to be able to access funding and that needs to be efficient and that needs to be at scale and the journey that Sun King has been on is one that demonstrates the level of maturity in the business. And when we first started working with Anish and his team, it really was more straightforward on-balance sheet, what we call on-balance sheet lending. And that has now evolved to the securitization transaction, which is really a milestone in the sector, but also in Kenya because it's really never been done there on a commercial local currency basis. That's the journey so far.

Jorian (13:13):

Anish, I'd love for you to bring to life how your service is changing lives. We, in the developed world, just take so many things for granted and we probably don't even think about the benefit of having energy at our fingertips. But this technology is genuinely changing business lives, educational lives, safety. Tell us in your own words please.

Anish (13:40):

If your experience is grounded in life in the west, in Europe or the US, where you walk into a room at night and you instinctively reach for the wall switch to turn the lights on and you instinctively plug in your phone wherever you find the outlet in your room to charge your phone, this can be a little bit hard to understand the experience of a typical off-grid house. But in a way, we have to go back in time. If we go back, say 150 years, to a point in time where, say in the US, the grid hadn't reached a majority of the population. And so, what did you do at night? You had a small gas kerosene lamp, say if you lived on a farm, and you fired up the kerosene lamp for light. So that's really how the majority of the off-grid world in many countries in sub-Saharan Africa and parts of Asia, how these homes access light when the sun goes down.

And so, what you can imagine is if you go to an off-grid village, say in Zambia or in Kenya in the late afternoon, you come back from work, you come back from, say working in on your farm, and it's a very busy time. It's busy because everyone's back, they have things to do and it's going to be dark soon. And so you're trying to get everything done before the sun goes down. And then as the sun sets and the town becomes darker, the doors shut, the windows shut and the town becomes much, much quieter. And the reason is that when it's dark, your safety goes away and it's much harder to be productive. And so fundamentally this is about productivity, it's about safety and security. It's also about education. So, if you are a student and you have homework to do, you're rushing to get that homework done before the sun goes down.

Because once the sun goes down, your light source is pay by the minute, you're pouring kerosene into a small kerosene lamp and you're literally burning your money. Many homes spend 5 or 10% of their income on energy for things like light. And it's dim so you're squinting, it creates these fumes that burn your eyes. And the chance of a kerosene lamp spilling over and causing a fire in the home, it's a constant

danger. It's not a remote chance, every village has a story and a recent story. And so, the experience here is that out of a lack of options, homes that live off the electric grid, they're primarily burning kerosene for light. It's dim, it's smokey, it's dangerous, and it's expensive to operate and it really holds back productivity. So, what happens when one of our agents comes to an off-grid village? They demonstrate the product.

They say, "Hey, I live just down the road and maybe I don't know you, but we know someone in common. And so, we don't have any power, we don't have the grid where I live, but I've got the Sun King solar system in my home, and I've got bright light." And they demonstrate the product and then a family signs up. And what happens is suddenly you have this abundant and free, in a sense, source of light that every night you can enjoy as much power as say 100 kerosene lamps. And so, you have bright light in many rooms, and you can easily keep those rooms lit until as late as you like. And so, productivity goes up, homes feel safer and more secure, and they're exiting this constant expense every week you're spending on kerosene just because you need to. Now, once you pay off your solar system, you've got free energy for life. It's powered by the sun that just abundantly shines on your roof every day.

And then what happens is that all the neighbors near that home, they start to see what's happening in this house. And they say, "How does this guy have power in his house? There's no electrical lines, but I see bright light shining through his windows and his doors", and they knock on the door and they say, "What are you doing?" And then the neighbors are interested. And so really what happens is once one home adopts solar, we see that the whole village, one by one, every home wants solar in their house because they see the benefits.

Jorian (16:53):

And I think the penetration of the houses you supply in Kenya is high, right? Give me some numbers.

Anish (17:02):

So today about one in five households in Kenya use Sun King for light and device power.

Jorian (17:09):

Wow.

Anish (17:10):

Still in Kenya, two out of every five houses continue to be off the reliable electric grid. So we have our work cut out for us in Kenya. And on a global basis there's still a billion and more that are off the reliable electric grid. So in round numbers, that's 200 million households. And really if we want to solve this energy gap, this requires an immense amount of financing because we have to make the solar affordable for every home everywhere. And so 200 million households, let's say \$100 per system, that's on the order of \$20 billion of financing that we need to unlock to be able to help every off-grid home everywhere finance power.

And so that's really why we're so excited about one, this relationship with Citibank, but also this \$130 million securitization, it's a meaningful amount of investment for us. It will allow us to meaningfully extend energy access in Kenya. But really, it's the mechanism that we're proving works. It's this method of unlocking just the global pools of ESG minded capital and being able to put it to use in service of off-grid homes in a repeatable and very scalable way.

Jorian (18:13):

Lovely. Eugene, the problem with telling stories on podcasts sometimes is we can make them sound terribly simple, but this is not easy and Anish's brought to life the scale of the task of the financing. So how does one start? Because I understand the method of providing this finance is pretty innovative. It's the first time it's been done in Kenya, but this isn't just a question of Citibank providing a loan. You're doing a whole lot more work behind the scenes of finding investors to bring to life that the work that Citi Social Finance does and the rest of the Citi team.

Eugene (18:52):

When we are financing in emerging markets, there is a perception of risk that we need to be able to navigate. And at the same time when we're looking at a business model that's innovating like Sun King, that's another layer to work through. And the securitization instrument, it's really as described, what it really aims to do is all of those customers that have bought a Sun King system and that then will be paying as they go, all of those obligations then get put into a separate vehicle. And that's what investors are buying, that's what they're lending against. And what that enables is a platform approach that makes the financing more repeatable. It's an instrument that is, a securitization instrument itself, is a well-known and established instrument with investors.

So it's something that investors can recognize and broadens the invest universe to enable us to reach that \$20 billion target to finance the sector. And then of course, no institution can do this alone. It really does take a village. And in this case, in this \$130 million securitization, we had seven lenders who participated. And it really is a very interesting list because we're proud to have included local banks in Kenya.

So it really is a partnership amongst different ecosystem providers, different types of financiers that come together to achieve one objective. And from a Citi perspective, it's also a partnership approach. We have our securitization specialists that are really core to delivering the solution. We have our team that is the cash manager and account bank that is providing services throughout Social Finance, but also our team in Kenya. Our bankers in Kenya are going to know that local market much better than anybody like me who may go there from time to time. So it really is a significant collaboration.

Jorian (21:15):

Anish, I believe I'm talking to you in Copenhagen now. You met your partner in Illinois. Your business is truly a global business. Bring that to life for me of where your team is, you're a real virtual team in all continents by the sound of it.

Anish (21:33):

Sun King today is delivering financed solar power in nine countries in sub-Saharan Africa. And so that's Kenya, Uganda, Tanzania, Nigeria, Zambia, Mozambique, Malawi, Cameroon and Togo. And so across these countries we have 350 branches. So Sun King branches, it's a store, it's a service center, it's a place to learn about putting solar in your house, and it's in the communities where we operate. So an interested customer can walk in, someone wants to come in and make a payment, they can come in, but most importantly, it's a hub. So around each of our branches, we have about 100 Sun King agents who work in the villages that are in the 1 to 50 kilometers away range. They live in their own village and then they make Sun King available in their neighborhoods. So today Sun King is 20,000 field agents across 20,000 different communities in nine countries in Africa.

And we're over 2000 employees in these nine countries. Our main head office is in Nairobi and Lagos, and then we're also a product technology company. And so all of the product design, manufacturing, quality management, that's based in Shenzhen, China. And so we are a very distributed company, but that's the nature of the work. Off-grid homes are spread out and we have to be where our customers are because this really is both, it's a combination of a technology company, a financing company, but also this is about the boots and the hands. It's about demonstrating at customer's homes, it's about installing the systems in their house and being back to service it whenever they need. So we really have to be very close to our clients

Jorian (23:16):

Eugene that kind of shape of the business, is that daunting for a bank to serve or is this meat and drink to Citi?

Eugene (23:26):

Yeah, it's a great question. I think it really plays to Citi's strength. I think we really are unique in our global footprint. And when I think about banking, it really is about ~~enabling and~~ enabling people and enabling clients to achieve their objectives and their ambitions. And because of our global footprint, we are pretty unique in being able to deliver these solutions to companies as spread out, as geographically diverse as Sun King.

Jorian (23:57):

So, what are the plans going forward? We're talking retrospectively about all the brilliant work you've been doing in Kenya and other markets in Sub-Saharan Africa, but it sounds from the way you talk, Anish, this is just the start.

Anish (24:13):

Absolutely. We're, as a team, happy with what we've achieved. We have to recognize that all the hard work that our agents and our staff have done to get solar to so many homes but really this is the beginning. Over a billion people have lived without power for generations and we really think that this is the generation where this problem can be solved. This is the five years, the 10 years where this problem can be solved. And so our biggest mission is about bringing off-grid solar to all of the billion homes that live off the reliable electric grid. Once a home has solar, what's so exciting is that it opens this door to much more than just light and phone charging. A week after we install a system that provides light and phone charging in a house, many of our customers call us up and say, "Can this thing power a TV? Do you have a water pump?"

So as soon as electric power comes in the house for the first time, the learning curve is very fast. Our clients want electric power and appliances that can benefit their lives in myriads of ways just as we have in our own homes. And so we really see one dimension is there's a lot more homes we have to bring power to, to get that kerosene lamp out of the house. But there's a path with each of these clients that's focused on really replacing the functionality of the electric grid. At first, home finances, so enough solar and battery storage to light up the house, and then you add in more solar panels and more battery storage and you add a TV and a refrigerator and a fan. And over the course of a few years, there's no need for the old school centralized carbon intensive electric grid to come to the village because every home has already financed their own solar power that they paid for themselves. And they're accessing power for free from the sun that shines on their own roofs,

Eugene (25:53):

So, I do think this is a really interesting part that ties into the why the securitization is interesting. One of the reasons why Sun King has to be able to finance the solar home systems is because of the limited purchasing power of consumers. If somebody had the ability to go out and buy this for cash, they would but there's a limited purchasing power of consumers in these emerging markets. And as you said, once they have their electricity, when I look at my house and I think about electrical appliances, I have a kettle, I have a washing machine, I have a refrigerator, and ultimately the limited purchasing power is going to limit people from walking into a store like we may and buying those off the shelf, they will need to be financed. And all of that is going to require financing from somewhere. And these instruments, like a securitization, are really well-placed to be able to achieve that goal.

Jorian (26:46):

Amazing. When you tell your story, Anish, do you surprise yourself sometimes in terms of that chance meeting that we talked about at the beginning? Do you have to pinch yourself? Because the scale of what you're doing and the effect that your business is having is truly remarkable.

Anish (27:05):

Absolutely. I feel like I'm the luckiest person alive. Patrick and I started Sun King with a simple, but in some ways, out-there idea. It was tough to convince our parents that we should leave the security of a

well-paying job in the West to start a company like this. But we just consider ourselves incredibly lucky. All of the success of Sun King, it's the result of really hard work from tens of thousands of agents and thousands of Sun King staff and partners like Citibank that make the financing, which is so essential, really work at the scale that the sector needs. So we're just happy this crazy idea has gotten as far as it has and that the future is very bright, but we know that the success, it's due to thousands and thousands of hands and feet.

Jorian (27:56):

No, you are very modest and you're very charming. But I genuinely believe anybody listening to this who might be just coming out of college thinking about how they could do something that is important work but also it's a business, isn't it? We're not talking about a charity. This is a business idea that takes lots of hours. But it's a brilliant story and I'm so grateful that you shared it with us. Thank you, Anish. Thank you, Eugene, thank you so much for your time.

Anish (28:27):

Thank you, Jorian.

Eugene (28:28):

Thank you.

LEGAL (28:29):

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