

Illac Diaz: Making Solar Energy More Accessible

ILLAC DIAZ: In the Philippines, they called us ilaw ng tahanan – like each woman is a light of a village. So work with women cooperatives, we give them ways to do it and this has been explosive.

RAMA CHAKAKI: This is Illac Diaz, the founder and global director of Liter of Light.

ILLAC DIAZ: I realized the power not of the factory or philanthropy waiting for somebody to donate it, but the power of the people to actually get it done.

RAMA CHAKAKI: Liter of Light is both a grassroots and a global movement. It uses inexpensive, readily available materials to make high-quality solar lighting for people with limited or no access to electricity. But it goes beyond just providing solar lights and into empowering and upskilling local communities to build their own.

ILLAC DIAZ: So I said to myself let's get the same components, from you know, radio shops, resistors, and plastic bottles, you know, used plastic bottles, from hotels and, you know, thrown all over the place and let's put it together.

We got all the parts from the local shops and we used local skills and we had 7000 solar lights, street lights, mobile chargers, all built by hand.

RAMA CHAKAKI: In today's episode, we'll talk about how Illac is making solar energy more accessible and how his infectious spirit of innovation is impacting communities all over the world.

I'm Rama Chakaki, and you're listening to Innovate with Purpose, the official podcast of Expo Live, an innovation programme by Expo 2020 Dubai.

[Intro sting]

RAMA CHAKAKI: Illac's spark of innovation started at a very dark time in the Philippines.

ILLAC DIAZ: Liter of light really started out as an emergency lighting system during one of the first and largest category five storms, typhoon Haiyan.

RAMA CHAKAKI: Typhoon Haiyan was one of the most powerful tropical storms ever recorded. In early November of 2013, the storm caused severe devastation in Southeast Asia, especially the Philippines, and killed more than 6000 people.

Wind gusts reached 315 km/h, water torrents destroyed entire buildings and the damage done was almost \$70 million - the costliest in Philippine history.

It's in this challenging time that Illac saw a great need.

ILLAC DIAZ: Really we were trying to figure out what was the big problem. And the big problem was in emergency aid. So 60 to 80% of humanitarian disaster funds when you really need it, it's used for logistics. So you have to transport it from one place in the world to the other. I mean, it's really required. But for light, I was

thinking, instead of importing solar – and it takes three to four months to get it out of a factory – and so I said, “I can't wait.”

RAMA CHAKAKI: And so the product was born. Illac would gather the electrical parts from radio shops, 12-volt LED lights from motorcycles, batteries from e-cigarettes and small solar cells that harness solar power.

And the name, Liter of Light, actually has a pretty fascinating backstory.

ILLAC DIAZ: When I was starting out the street lights, I was using motorcycle LEDs. Right? So motorcycles are one of the most frequently used mode of transportation, but it also has 12 volts, tight? So the LEDs, the lights work also, on the same as a solar lamp.

And so I would like be cutting up the LEDs from strips and whatever I could get. So one of the things that were the problem was insects used to come in and they used to be attracted to the light. They would gather there, but they would also excrete and mess up my circuits.

Water, whether rain or, you know, through the insects would mess up my circuit.

RAMA CHAKAKI: There happened to be a large soft drink plant that was hit and destroyed by the typhoon.

ILLAC DIAZ: And so they had thousands of plastic bottles (one liter) that were not used. So I said: “Hey, can I have it?” And they said, “Yeah, we're thinking what to do with it.” And so I used them to put the LEDs inside and I put the bottle on top of it and that stopped the rain and the insects from messing up my LED lights.

And so everybody said, “Wow, it's a ‘litro ng ilaw’. It's a liter of light.” And I said, “Oh my gosh, it's a beautiful name!”

RAMA CHAKAKI: Liter of Light is an impressive movement. It's a solution that has many benefits.

First, let's look at affordability.

Through innovating this product that can be made from local materials, Illac and his team have created a way for local communities to make their own solar energy lamps without having to rely on importing it from other countries. It has addressed a growing need for energy especially in places where affordability is an issue.

ILLAC DIAZ: The energy transition is always seen as a large scale: these large solar plants. A lot of them fly over – the electric lines fly over – these villages that actually have the land but cannot benefit from it because they can't afford, a lot of them, \$2 a day.

I just believe that they should be empowered to help themselves.

You know, to be able to have something where they would have complete control. It's been wonderful to be able to bring that light.

RAMA CHAKAKI: It's not only an issue of up front affordability, but continued affordability. Liter of Light is financially sustainable because it enables local communities to fix, retrofit and make their lights.

ILLAC DIAZ: Solar is designed to be breakable. So if you import it, they really know when it breaks. It's the business model of solar in developing countries is it should break, that way you have to buy it again in a year and a half. So it was really wasteful.

But I started to believe that I could shift this from an imported, patented and expensive, into a local, repairable and scalable business model. I could actually teach women cooperatives in my country to be able to get into these green jobs. Produce it, sell it and keep the money in the village; it was just a revolution to understand that they could keep 35% of their gross income from whatever they produce in the village and not have to burn it up in fossil fuel, dirty fuel.

RAMA CHAKAKI: In that sense, it's truly revolutionary. It's not only financially sustainable but also environmentally sustainable.

ILLAC DIAZ: We started realizing that we can shift the business model of kerosene, which was, I found in short supply in the disaster area, but it also is in short supply in villages that were off-grid in the country.

RAMA CHAKAKI: Besides, kerosene is expensive, bad for the environment, and dangerous. Kids using kerosene lamps would sometimes get third degree burns and there was always the risk of fire if an accident happens.

Illac's innovation made light more affordable, sustainable and accessible. It also enabled communities to install street lighting to make routes safer for walkers. And so the added lights can also help prevent crimes.

ILLAC DIAZ: The reason why I had to build street lights, it's because I needed a corridor of light for the women to get from the aid camp to the village with light. And so to lessen down the crime rates against them I built this corridor of light.

MUSIC

ILLAC DIAZ: There was a senior official from the U.S. government that was going around and he was wondering why the villages were lit when he had to come in. I think by helicopter. You know, and he said: "Hey, why are their villages all lit up by light?" And they said: "Oh, there's this guy that's teaching the women cooperatives and paying for them to build lights. So it was a very unique system." He says: "Oh, I need to talk to this guy." And so I was invited out into the middle of an airport and in comes John Kerry, Secretary of State [laughs]. And he makes a speech and he says, I want to call out that guy. You know, he was, if you Google Liter of Light, Tacloban, Tacloban is the village.

And he says, yeah, he's making solar lights out of plastic bottles. He was surprised and that's where I got my first grant.

RAMA CHAKAKI: What a great story. It's wonderful that you keep pushing ahead and growing all the way up to this Expo Live grant. Tell me a little bit about how this grant has transformed Liter of Light.

ILLAC DIAZ: That allowed me to scale up and so we do about a million people a year, 350 women cooperatives all around the world. I believe that brown, black, developing countries, indigenous, are underrepresented in this energy transition story. We would like to also have a voice and our stories told that, you know, we're

not only beneficiaries, but we're also inventors and part of the stuff that I'm doing here is collating all of these years and putting it into a movie, a documentary.

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RAMA CHAKAKI: Illac, tell us about the business model for Liter of Light? How is it set up?

ILLAC DIAZ: So this is where a Liter of Light is sort of different, I guess, from a donation model. We really believe in putting technology in millions of hands that, you know, people that need it should be able to build it and scale it. Even without us. So how does that work?

So our business model is, we use the habitat for humanity model, where they would charge the corporates for all the pieces and parts. And then we have a workshop where we get people to build the lights by hand. So in 30 minutes, I can make you a solar engineer. I can teach you how to make a mobile charging system. And in an hour, I can teach you to make a streetlight.

RAMA CHAKAKI: So initially, big companies who are looking to offset their carbon and invest in green technologies pay for the parts needed to make the lamps at an additional fee.

ILLAC DIAZ: 20% for our operations, our salaries, our rentals, and then we give them to the women cooperatives to either start out their energy transition. So we tell them, look, we give you a hundred lights, mobile charging systems, for you to charge it.

RAMA CHAKAKI: And then the locals are given the materials and a workshop for free to build these lamps. The intention is to get them completely self-sustaining.

ILLAC DIAZ: So they're like this micro power, pop-up co-operatives.

What's nice about it is because it's built by hand, with a simple screwdriver, they can also repair it. They can actually fix it. We're now not worried if let's say things get broken in the middle of the Amazon or in the middle of, you know, the Maasai Mara in Kenya or in, you know, in the Rohingya areas. There are all of these solar engineers that know how to fix it by hand.

RAMA CHAKAKI: This model and its success has spread to new communities. Illac's innovation and the Liter of Light has become truly a global movement – it's in Brazil, Columbia, Kenya, India, Nepal, and many more places. And it's taken Illac to many places around the world.

ILLAC DIAZ: I went to the Maasai Mara, where we were teaching how to build these solar lights. And teaching the women cooperatives and coming back one day, instead of holding the light down on the ground, he was holding the lights horizontal.

And I said, "I'm tripping on the bushes" and the guy goes: "Oh, uh, I'm putting up the light to look for two dots." So what does it mean? Oh, it's because I'm looking for lions and the light will reflect in their eyes. And so we have time to run. I said, no, no, no, no. You know, I don't want to, I'll just trip. Just keep the lights up, keep the lights up.

RAMA CHAKAKI: Illac's innovation hasn't just stopped at lamps. He's begun to connect other local devices and lamps being built:

ILLAC DIAZ: I could connect their phones without internet and so people could communicate and share stories and videos, especially for women educating their kids.

And next thing I know I'm now, you know, like linking all of them to make a village wide mesh, not connected to the internet but now they can share information. So they go to the city, they upload their phone and then they come back and then they share information.

RAMA CHAKAKI: Illac continues to innovate and work with Liter of Light to illuminate, empower, and enable different communities around the world.

ILLAC DIAZ: We were very excited that this DIY solar was becoming a backyard operation.

I started this nine years ago. I thought that, you know, I would be able to live the life at five years, but, you know, it takes time. Nobody tells you when they say change the world that, you know, it's actually pretty difficult. [laughs]

RAMA CHAKAKI: "Innovate with Purpose" is the official podcast of Expo Live, an innovation programme by Expo 2020 Dubai. Innovation can come from anywhere, to everyone.

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