Gaya: All right, guys. Thank you again for coming. I'm here to talk about Earth Enable. As you now know a lot about it. As the picture that you saw in that video, this is how over a billion people in the world live, and 80% of Rwandans actually live and sleep on dirt.

[00:00:30] The reason this is a serious problem is that dirt floors make kids sick. I discovered this problem, as you just learned, through a class I took when I was an MBA at Stanford. The class sent us to Rwanda with the goal of finding a way to make homes healthier. Very broad design challenge. We looked, as I said, at everything from water filters to irrigation systems to anything that could've somehow improved health in Rwanda.

One of the big inspirations for us was a study that was done out of UC Berkeley several
[00:01:00] years earlier by Paul Gertler and several other professors. Which actually showed that replacing a dirt floor with a clean floor, with a concrete floor, reduces diarrhea by 49% and parasitic infections by 78%. Which, to me, was mind blowing and, frankly, I didn't really believe the results. Then, when we got to Rwanda, part of the class was to spend two weeks with people in their homes. Spending time doing exactly the chores that
[00:01:30] they're doing and replicating their daily lives. I mean, as you saw in the video, dozens of girls sweeping the dirt floor, dust clouds everywhere. They started coughing, I started coughing.

Actually, little anecdote. When I used to be a long distance runner and then after that trip, I got adult acute asthma and no longer can run more than two miles. I personally also experienced the health impact of just living in constant dust, because that dust is filled with bacteria.

Other than that, I mean, babies don't have diapers in most villages. So there's also kids
[00:02:00] pooping and peeing all over the floor. That, obviously, just kind of stays there because it can't be cleaned. That's another reason why you have this significant health impact of having a clean floor. Then, just bugs all over the place. Termites, fleas, jiggers, you name it. Worms, which also cause significant problems.

The study, as I said, showed that there is a solution, which is concrete flooring. The
[00:02:30] answer seems very simple. Why don't we just take all the dirt floors and lay them with concrete and then we're done. Two problems with that. The first problem is that concrete is incredibly expensive. For a typical Rwandan home, it would cost over $250, closer to $300 to floor, which is obviously out of people's reach. Second, concrete is horrible for the environment. Concrete and cement are responsible for 5% of global carbon emissions. Which is huge. Which means that if Africa were to start developing
[00:03:00] the way that we have in the West, there just wouldn't be enough limestone left. It would be devastating. There wouldn't be enough planet.

It seems like dirt floors make kids sick. That's obviously not acceptable, and concrete is unsustainable and unaffordable. It doesn't seem like we have a lot of options. That's why we're here.

We went back to Stanford obsessed with figuring out a way to solve this problem because we knew that while this was a health problem, it was also, a floor is something

[00:03:30] people actually wanted. It's a one-time intervention. It requires no behavior change, and, it's something that people want. This seems like an obvious thing to figure out. If only we could do it. As I mentioned in the video, lots of very bad ideas until we found a bunch of hippies in California that already had figured out the solution.

This is the earthen floors as you saw in the video as well. It's basically made of compressed earth and then they seal it with linseed oil. Since linseed oil wasn't available
[00:04:00] in Rwanda, that's where Rick, my brilliant biochemist co-founder comes in, who was in the class with me. He figured out a way to manufacture it ourselves at a fraction of the price. The other thing about our varnish, which is really great is that it has no volatile organic compounds, which is those noxious fumes that you sometimes can smell with paints or with usual varnishes. It's much safer, much cheaper, and we manufacture it in Rwanda.

[00:04:30] To jump back to exactly how the floor is made. First we compact laterite. That's a rocky soil found all over Rwanda. On top of that, we spread out a layer of sand and clay, which then forms this really smooth surface. Then finally we paint on our proprietary oil, which Rick came up with. That turns into a hard plastic resin when it dries, so the floor is waterproof, abrasion resistant, and durable. Also, very easy to repair. Unlike cement. That's one of the big challenges as well. You see cracked up cement floors all the time in
[00:05:00] Rwanda and there's nothing you can really do about it.The result is a floor that is 80% cheaper than concrete. Not to mention has 90% fewer carbon emissions. Less embedded energy.

The thing is though that even the best products don't actually make an impact unless you can figure out how to get it to people. That's actually where I think we've innovated much more.

We've gone through iterations upon iterations to try to figure this out. Unlike
[00:05:30] distributing a lot of other products, we're distributing two trucks of material to every last mile household. No-nonsense distribution challenge.

We started with a full service model. We started by trying to full-time hire masons on our payroll and also last mile deliver material to every single house. What maybe should have been obvious but was not obvious at the time was that this doesn't actually scale. Economy as a scale is actually going the other way around, which is not what I learned
[00:06:00] at Stanford Business School. As a result, we realized we had to do something else.

Then we tried a completely DIY model. The idea here is that we would then have masons go and train customers to build their own floor. Then stock the material at shops like this, where it's local shops already around and we just put the sand there, put the varnish there and that's that. What we found, people loved the price, but just really didn't want to build their own floor. Which you can kind of see why. You don't want to
[00:06:30] build your own floor, I don't want to build my own floor. It's like the only floor you're ever going to build, you're probably going to not do a very good job. They were side hiring random masons who had nothing to do with us to get the training on their behalf. Train the mason to get the training and paying the mason to get the training. Then in addition to that, they were then side hiring them afterwards to do the work for them.

We thought this was brilliant. Then you actually have a mason that's creating a business for themselves, getting a lot of income, who actually knows what they're doing and is
[00:07:00] good at building a floor, unlike a one-time customer building their own floor. The pain point was still there of people not knowing who to find, how do you get a mason, and how do you know that they know what they're doing. So, Angie's List was born. Do you know Angie's List in the US? Yeah. We copied that, put it in Rwanda, except in rural context, which involves papers on the wall. Laminated sheets of paper on the wall of [inaudible 00:07:24] shops with star ratings that we fill in with a Sharpie marker and
[00:07:30] then go to nail polish remover and wipe them off every month.

As you can see here is four masons who have been trained within that geographic area. All of them have a star rating. The first one is their quality of the floor and the second one is their customer service rating. How much the customers liked them, were they on time, were they nice to them. Things like that. That's the model that's really scaled. That's the model that has been able to connect people with masons really easily and
[00:08:00] have a transparent process where masons are also held accountable.

The sales process is largely very below the line. Lots of door-to-door sales. When we have sales reps that go door-to-door and just tell people about our product. We go to village meetings all the time. Rwanda has a very structured system when it comes to village meetings, and so we're constantly going there and explaining how the product works. It's getting a lot of contracts through that process. Then our biggest sales channel
[00:08:30] is actually customer referrals. Which is the easiest thing to do once you actually have installed a floor is just to get people to go that. That's actually what's happening here. This is a floor in progress. As soon as people hear that something's going on, they all come crowd in. Of course, we have one of our people who's ready to sell some floors.

After that, one thing that's also very important about our model is our customer service. We have over-invested to make sure that our customer service is central to our product
[00:09:00] offering. One of our values, our second value, is to set the bar for customer care, and exceed their expectations every step of the way. This is actually incredibly important, because most rural Rwandans haven't really good customer service before. I'm sure many of you have also experienced bad customer service. It's not a rarity here by any means.

As a result, that has driven a ton of sales as well because they finally have someone that they can trust. They finally have a partner that they know won't just leave. There's a
[00:09:30] saying in Kinyarwanda that says that masons build looking at the door. Which essentially means that go and then peace and then you're left with whatever you have whether you like it or not.

We follow customers after a month, after three months, after six months and collect data on how the floor is doing. As well as ask impact questions. Then we've gotten a sense of how the floor is actually improving health as well.

The demand is massive and the potential is also enormous. In the last three years, we've
[00:10:00] already reached 10,000 people. This month we'll sell about 400 floors. That's about

1000 ... About 2000 people just in one month. That's starting a hockey stick, which is very exciting. The thing is that we don't believe that us as Earth Enable can reach the 500 million people nearly fast enough. 500 million households, sorry, fast enough. We realize that one company doesn't solve this problem, but, an industry does solve this
[00:10:30] problem. Here's how we're going to build our industry.

First is to get it right ourselves. To figure out what is the product, what is the business model, what is the systems that you need to scale this, how do you adapt that product to different places. Get it right ourselves.

Next, actively spur an industry. Figure out ways that we can get local partners or other existing NGOs and handhold them through the process of trying to scale this themselves.

Then after that, we hope that we'll create a franchise network of entrepreneurs that
[00:11:00] want to come in and copy exactly what we're doing all over the world.

That's our scale strategy. One thing that is also very exciting that we're doing next is trying generate enough evidence that would be able to get the government really interested.

Look at three different things. First, it'll assess elasticity of demand. Which means as you raise the price, how does the take up change. What that means is we could go to the
[00:11:30] Rwandan government and say, hey, look, if you reduce the price by 10 bucks, you give a $10 subsidy, that increases take up by 35%, or whatever it is. This would be an investment for the government of $10 for five household members for 20 years. That would be a very, very cheap investment that would massively uptick demand. I do believe we'll see that kind of result because we've seen such strong elasticity right around our price point, which is how much it costs us to build a floor. If we can reduce
[00:12:00] the price incrementally, that itself will lead to potentially massive take up. That's what we're going to assess.

The second thing is the impact of financing. That second demand curve, I'm getting very nerdy right now. The second demand curve is what the elasticity of demand may be if you were able to spread out payments over time. If instead of having to pay over the course of about a month, which is what people do right now, if they could pay over six months, how much more does that increase our demand?

[00:12:30] Finally, this is what's called a randomized promotion design. Which means that those price points will be randomly selected. Customers will be picking out of a hat basically what their price is of their floor. Because that's an exogenous variable, that's something that's randomized ourselves, that can be used to detect causality. That can be used to say whether or not our floor makes a health impact and how much of a health impact that makes.

With this design that we've decided to use, we're actually able to test three different research questions at the same time.

[00:13:00] I'm going to stop there and take any questions that you have. It sounds like we have a couple minutes left only. Basically, Earth Enable is the name of the company. I'm Gaya. The goal is to eliminate dirt floors. Any thoughts or questions or answers you have of how to do that are more than welcome. Thank you guys.

Yeah. Great question. Right now, per square meter, it's about $2.50. For a typical home, it's about 50 bucks.

Speaker 2: You find that people are really able to pay that?

[00:13:30]

Gaya: That's where the financing comes in. People tend to do room by room just to finance it over time. They'll end up paying about 10 bucks a month as they can afford it. We often find that during harvest season when people have a lot of income, that's when they start doing multiple rooms at a time. They don't like that though. So a finance solution would be much better. They much prefer just to get the whole thing done or do half and half so they don't have to move out of their house at all. Just be done with it rather than prolonging a construction process over time. That's generally the choice that they have.

[00:14:00] That's why we're hoping to find a finance solution, but the current solution is just room by room.

Speaker 2: Since ultimately [inaudible 00:14:07] health model. Have you thought of speaking to someone at the Minister of Health in Rwanda?

Gaya: Yeah. We've been in advanced conversations with the government of Rwanda right now in terms of how they would want to support us. One of the really fascinating things

[00:14:30] about Rwanda is that they actually have a public health system, mutual [inaudible 00:14:33] insurance system. You can pay 5 bucks per person per year to be insured and then if so one of your kids gets diarrhea, you can go to the health clinic and pay just 40 cents or something like that to get the treatment, get [inaudible 00:14:47] and whatever else.

That costs the health system way more than 40 cents though. Their health system, based on a study that was done, is spending an additional over $2 for that. As a result,

[00:15:00] we can calculate out the cost to the health system of all these cases of diarrhea. Our back of the envelope showed that was over 50 million dollars per year. If we can show a decrease from our study of this is going to reduce diarrhea by x amount, it's like a vaccine. It's like a preventative medication to have a floor. Then we can say we're going to save you 27 million dollars or whatever it is every year, over and over and over again. That's the level of the conversation that we're having now with them about how that

[00:15:30] funding might come about.

Yeah. In the back.

Speaker 3: Just a follow-up to your last response about calculating the reduction to diarrhea from the flooring. I work in water sanitation northern Rwanda and I wanted to ask how will you calculate the association of reduction in diarrhea through the flooring in a household that doesn't have flooring and it doesn't have a drainage system?

Gaya: How to do the impact evaluation?

Speaker 3: Yeah.

[00:16:00]
Gaya: Yeah. That's why we're doing the randomized controlled trial to be able to detect that. The way that the traditional randomized controlled trial would be you have a bunch of people without a floor. You randomly select some to get a floor. Then you have the others that don't have a floor. You measure the baseline statistics on both. Prevalence of diarrhea, for example, on both. As long as those are the same at baseline, then after you have done the treatment, then you can see the difference between treatment and
[00:16:30] control after the floor has been administered. That's the treatment. In our case, instead of doing the RCT in that traditional way, we're doing this randomized promotion design, which is another ... There's many other different types of tools and regressions and ways to evaluate impact. That's another kind of clever way to do it. Which is to randomly give different price points out. Then, if the randomized price point is 5 bucks for the floor, most likely many more people are going to buy it than if the price point is $100 a floor or whatever it is.

[00:17:00] As a result, then you'll be able to say, that's an exogenous or a completely unrelated indicator of take up. It's called an instrumental variable for the treatment, for any other nerds in the room, about how all that works. That's our plan for the impact evaluation.

Speaker 3: One of my questions is, how do you untangle the fact that the variable that households that have toilets versus that don't have toilets?

Gaya: You would control for that. That would be one of the controls that you would use. The
[00:17:30] bigger point is that the randomization should take care of that because in theory, the people who got the floor may or may not have toilets. The ones that did not get the floor may or may not have toilets about at the same levels so that you'd be able to see both. Usually that is something that you would control for as well.

Speaker 4: Thanks so much for your questions. Gaya's going to be here. There's lunch downstairs.
[00:18:00] You're welcome to go down there and fight people for the lunches that are available. We'll be back-

Gaya: Are there limited lunch?

Speaker 4: Some people will get lunch.

Gaya: Okay.

Speaker 4: You'll get one

Gaya: Great. There are free lunches. Thank you.

Speaker 4: Thank you, everybody.