

Tacora: So we now turn to how innovation technologies, products and service delivery models for smallholder farmers are revolutionizing agriculture in developing countries. Please join me in welcoming Chris Burns, the Director for Center of Digital Development within the U.S. Global Development Lab and our distinguished panelists.

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Chris Miller: Thank you, Tacora, and thank you everyone for choosing to spend the next 43 minutes with us, as we embark upon a topic that's very near and dear to my heart.

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And that is "Innovations in Agriculture" with a specific focus on the smallholder farmer. Ten years ago we wouldn't be having this conversation. I would posit that even five years ago, we might have been, but it would have looked significantly different. What then has changed so much in such a short span of time. Well the market mainly, driven largely by the digital economy and the mobile revolution.

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Financial flows and financial behaviors have also changed during that time, so have business models. The types of actors and organizations pursuing development change have also shifted. So has our understanding of the nuances around agricultural growth and how to empower smallholders, our capacity to foster agency and independence and to empower those without voice, particularly female farmers to chart their own way. That has changed as well, so actually quite a bit.

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Yet reaching smallholder farmers across the world continues to be a tricky endeavor, and a pretty tall order.

Depending on which statistics you follow, upwards of 1.5 billion farmers and their families are growing 80 percent of the world's food. It's quite a bit. And there's gonna be greater pressure as populations continue to increase along with our food needs.

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That's why I'm so excited to be here today with four panelists who embody this new moment in time. You really represent different stages of an agricultural value chain from inputs, to on farm production, to post farm production, storage, and to markets. To my left, I have Ashland Donahoo. Partnerships Manager at myAgro.

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MyAgro is a non-profit social enterprise offering a mobile layaway platform that enables smallholder farmers in Mali and Senegal to safer seed and fertilize their purchases. To her left Lisa Smits, the Founder and Managing Director at Ignitia. A company that provides daily customized weather forecasts, to farmer's mobile phones in West Africa. Next is Jenna Rogers-Rafferty, the Director of Strategic Alliances at KickStart International, a non-profit social enterprise that sells low cost irrigation pumps for small scale farmers in sub-Saharan Africa. And Finally, Brian Lisot, the Director of International Business Development at StoreitCold.

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A company that sells the coolbot, a device that enables users to create affordable cold storage solutions, using standard home air conditioners in Honduras and Guatemala. We don't have a lot of time so we've gonna dive right in.

Thank you all for joining me and again thank you everyone for being here today. So quickly, just to kick things off, really want to hear a little bit about your products and services that you provide and how you reach smallholder farmers, how you

[00:04:00] define the smallholder farmers, and perhaps even a little bit how you segment them, given that smallholder farmers are not homogenous around the world. Ashland we'll start with you.

Lisa Smits: Yeah, sure. MyAgro, as he mentioned non-profit social enterprise in Mali and Senegal. What we offer is a way for farmers to pay in advance, for farming inputs. The issue they face is that they don't necessarily have a lump sum of cash available when they would need it to invest in their farm, so they can actually use their mobile device to pay little by little for those inputs with us. And then we also provide agricultural training as well as the delivery of the inputs to the local level. All of that helps people to boost their harvests by 50 to 100 percent and grow their incomes.

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[00:05:00] So in terms of our customers, we focus on where we can have an impact so we'll all very much a rural focus. Not working in the easiest places but the people who have the most potential to increase their harvest by working with us and that's why we've targeted Mali first as well as Senegal. And we focus on women. They are the ones who have the most limited access to fertilizer and improved inputs as well. So we focus on them and helping them grow food crops so they can improve their food security.

Chris Miller: Great.

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Lisa Smits: Lisa Smits from Ignitia, we do tropical weather forecasts. Because it turns out, that farmers either don't have either access to get a good forecast but also the forecast around the tropics have been awfully wrong. This was not only a scientific challenge to solve but also challenge of delivery, how to reach the rural farmers. What we have done is that we today provide small scale farmers with text message daily that they can get a forecast and because of that, plan their day. Our forecasts today are distributed throughout Ghana and Nigeria. We have been also touching Mali and Senegal with them and have today about 225,000 farmers that daily get this information.

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Jenna Rogers-Ra: Yeah, so KickStart International focuses specifically on small scale irrigation technologies for its smallholders. We focus on that area of input because we recognize that that's a huge market and government failure. Sub-Saharan Africa is one of the only remaining regions of the world that hasn't experienced significant increase in malaria of the area of agricultural land that's under irrigation or another form of water management. Essentially about four percent of all farm land in sub-Saharan Africa is irrigated, which means that four percent is feeding 100 percent of the population at any point in the year when it's not raining, which is most of the year. We designed our own small scale, mostly all clean energy, so mostly human powered and now solar powered irrigation pumps. And our distribution model is selling them through local private sector suppliers and distributing them through the local private sector. That's to make sure that that sustainability is there, that the private sector is also growing and the impacts will be sustainable, that spare parts will be available locally long after the products have been adopted.

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Chris Miller: Brian.

Brian Lisot:

Yes, so Brian with StoreItCold. Our coolbot is a device that was actually developed by a small farmer in upstate New York and now we're trying to target smallholder farmers in Honduras and Guatemala. Essentially allows you to use a traditional window air conditioner to cool a well insulated room to 35 degrees. And the way we're reaching smallholder farmers is through their associations and also targeting aggregators and exporters. The segment that we've really tried to focus on is high value horticulture crops that are traditionally being exported. Yeah.

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Chris Miller:

Great. So you've heard a quick snap shot of what each of these four companies do, and the representatives and where they fit in. By a complete twist of fate, you are sitting in order of how I view an agricultural value chain from inputs to market. And you're also representing different regions around the world. We've got west Africa, KickStart International largely in east Africa but branching out. And StoreItCold in Latin America. So I mentioned that of course, smallholder farmers, they're not homogenous. They also aren't static. If you think about your business models over the years, and some of you have been around for a couple of decades, some of you just for a couple of years. But you think about the evolution that you've taken, and the journey that you've taken, with respect to trying to hit smallholder farmers at points of time when they are changing, when things are going on in their lives, when they are not just farmers but also need healthcare and access to education, and income to drive their businesses, and serving as community leaders.

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How have you looked at the evolution of your products and business models to capture some of those differences and nuances across smallholder farmers. Jenna, I'm gonna turn to you first please.

Jenna Rogers-Ra:

Sure. Yeah, in terms of ... I'll focus on the aspect of how we get our products to farmers because we've had a pretty major pivot in how we do that in the past couple of years. Of course, smallholders are very difficult to reach especially across widely dispersed geographies, and with limited infrastructure. So we recognize that historically the bulk of our efforts and resources have gone into the actual reaching and mobilizing of farmers and convincing them to adopt what's often times, a completely new foreign technology. It seems like an incredibly high risk when you're at the bottom of the pyramid. In more recent years, we've started working through partnerships with other groups. That could be any of the groups represented on this stage that are also working with smallholders on any aspect of their livelihood, health, education.

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We see a lot of synergies where the incorporation of irrigation can have a huge impact. By working in that way to actually reach our customers, we're getting a huge payoff in terms of cost efficiency for KickStart. It enables us to tap into these existing networks and really cuts down on our ability to reach farmers and thus our ability to scale is enhanced. And at the same time, farmers are receiving a much more complimentary package of inputs because we're working in partnership with

other groups.

Chris Miller: [00:11:00] And you've had the luxury of time a little bit, 25 years working through this. Lisa perhaps you are on the other end of the spectrum, having the luxury of a brilliant business model but not so much time to build it out. What does it look like for you as you've built the model out from Ghana throughout other parts of west Africa?

Lisa Smits: [00:11:30] Right. When we started in Ghana in late 2014, we thought that an excellent idea of how to communicate to smallholder farmers would have been by making symbols. This had to do with a large majority of our customers today are illiterate. It turned out that this was not successful at all. People looked up, they had said like, "Oo, this could be a spider." It was a sun. So we learned our lesson and symbols was nothing that was intuitive and went back to basics of text and worked with word recognition instead.

[00:12:00] Today with such a dispersed group of farmers that we are working with, some farmers say that this information is too simplistic, you know it doesn't feel sexy and cool. While there are the other spectrum of it that says that when we send out our monthly or seasonal forecast, they can't recognize the same words as they would do in the daily forecast and that makes them have to consult somebody who can read them right. So what we're looking into now, how can we spread this innovation. Not only farmer by farmer, and mobile phone by mobile phone, but perhaps we can link it to a fertilizer package or a seed package. So I think that we're also going in the same direction of partnerships, rather than reaching directly out to each individual.

Chris Miller: [00:13:00] So you've touched upon something interesting about trying to figure out what symbology works for farmers in different communities. What does that process look like? How do you actually go in and figure out with someone or a community what sticks?

Lisa Smits: [00:13:30] Oh that's so difficult to answer. What we saw initially is a really good way it's just informing about that we exist. So we went out with a text message saying, "Would you like to subscribe to our weather forecast?" And if we picked up like one person signing up in that village by a short code, by a mobile device, we saw that the word of mouth spread by itself. Within a period of two seasons, we would basically have a majority of the village's farmers using the forecasts. What then happened was really interested because people in the same village started to get different forecasts and that was not what they counted on. But it turned out that they farmed on different parts of the village, which meant that we needed to do hyperlocal forecast in order for it to be as accurate as possible.

[00:14:00] Chris Miller: So you're really talking about a user experience that is built on the trust of your system and the services you're providing.

Lisa Smits: Totally and trust is so hard to gain even with smallholders and from our case, we can't even talk to them, we're just pushing out a message and hoping that they

[00:14:30] would read it and that they would start reading it. But trust comes over time and we've been able to prove over and over again that we have something valuable to deliver, they start to use it.

Chris Miller: Ashland, I'm sure myAgro faces something very similar building trust and trying to convince farmers that they should be spending the small cash that they have on mobile lay-aways for inputs. Based on what Lisa's saying, could you talk a little bit about the role that user centered design has in the work that myAgro does?

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Ashland Donahoo: Yeah, absolutely. So trust definitely, when you're asking people to part with their cash in advance in particular. We don't have a loan system so they're not getting something from us and then paying us back. We're asking them, "Okay in six months from now, trust us." "We'll bring you these inputs, and we promise they'll be on time, and we'll give you this training that will help you to increase your harvest." And so that trust thing is a big part of what we have to build with the communities where we work. So we do have a number of ways. We have developed an extensive agent network and through working with that network those agents go out and are interacting with the communities on a very regular basis.

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[00:16:00] In addition to that we have these at the local level, vendors. So people who are already selling stuff in the village, we train them, and they help farmers to process their myAgro payments. And so that's really about being user focused and helping those folks to match their existing behaviors just for a slightly different product. We've also done extensive work with SEAGAP over the last few years on making our model a lot more efficient. That vendor interaction model is a piece of that. So we did lots of user centered design work, human centered design work, talking to farmers and figuring out what are the products that you really want and what's the best way for us to offer them.

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What we've ended doing is converting to more of digital platform and putting smart phones into the hands of our agents and our vendor network. So we're able now to actually move toward much better financial sustainability by having the agents manage groups of vendors rather than being the ones to interact directly with farmers. The vendor will have a smart phone app where they can have a list of the farmers that they need to talk to and have a really simple design on enrolling a farmer. Knowing who to go talk to to encourage them to make a payment that week for example.

Chris Miller: It sounds incredibly easy.

Ashland Donahoo: Yeah.

Chris Miller: You just lay it out so clearly. I know there's a lot more involved. I want to come back to that point in just a second but want to turn quickly to Brian as we talk about the evolution of what StoreItCold is doing with the coolbot. You have a much different experience and you're also sliding into a different part of the Ag. value

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chain. Could you talk a little bit more about that evolution?

Brian Lisot: Yeah, definitely. It's not a product that sits on a shelf and is an easy sale. It's very educational so we have to approach smallholder farmers and the associations, and exporters, and aggregators that they are working with bottom up and top down so to speak. Things we've done is we've got boots on the ground that are actually going out and doing demonstrations to farmers and the associations they belong to.

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[00:18:30] Trust is not something that is easily gained and especially when it's such a new technology. It's hard for the farmers to believe that a window air conditioner will actually work to the same capacity as a commercial cooling system and at 80 percent of the cost, or at 80 percent less than a commercial cooling system. So from the bottom up, we're going out doing demo days at the smallholder farmer level and then we're also visiting trade shows. One thing that has worked really well for us has been doing an advertorial on the local news stations. Agricultural focused stations that actually gives our team a platform to explain the technology and explain the benefits and the cost savings. And then also how it will benefit the smallholder reducing waste and rejection rates when being sold.

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Chris Miller: You're relying on a do-it-yourself product. What you just laid out, where does that Ah-ha moment build in, where you get people to recognize that this is actually ... There's something there that they should be exploring?

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Brian Lisot: So funny you ask, it's very much a do-it-yourself project here in the U.s. Central America is not a do-it-yourself market and it took us time to figure that out. So we actually partnered with local cold room construction companies, who were traditionally installing commercial systems or repairing commercial systems. The Ah-ha moment was we need to find someone who is an expert in all things, cold rooms, to be able to offer the smallholder farmers or anyone purchasing from us, a turnkey solution. That was when we really turned a corner and started to get a little bit more traction both in Honduras and Guatemala, because it's not a do-it-yourself kind of market.

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Chris Miller: Got it. So on this end, we're talking largely about the delivery of information, services. On your end, it's more about the delivery of tangible products. Jenna could you compare and contrast a little bit with what Brian's saying as you talk about how you get your irrigation pumps in the market. You started to touch upon the distribution network there but what does it look like when your specific focus is reaching that smallholder farmer?

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Jenna Rogers-Ra: Yeah, it looked a lot like exactly what Brian described in terms of going to these forums where farmers got their [inaudible 00:20:52], agricultural affairs, and trade shows and really recognizing the need that these farmers need to see to believe basically. Even if, in our case, our manual irrigation pumps actually seem like an incredibly old and simple technology. The whole concept that you can control water on your farm is pretty radical for most African smallholders. There's no

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[00:21:30] tradition of that. It's totally, really a significant behavior change and it's a lot of money, even with the most affordable price point. I mean I'm sure for all of our products, even if it's the small layaway payment, it has a huge opportunity cost for the customers that we're targeting. They need to feel really, really confident in what they're purchasing and making that huge sacrifice to purchase.

[00:22:00] This one-on-one, the need to actually show was a huge part of our marketing and what we recognized was really essential for reaching farmers. That was then, as I described before, coupled with having this private sector supply chain there. So when that demand was created and when farmers were convinced that, "Yes, this is something that I'm going to get a really great return on." They could go and purchase it at a local retail shop. We were able to maintain the same value of those interactions through this partnership model.

[00:22:30] And then to bring in this other element of trust that's come up across our programs where you can leverage on trust that already exists between, for example, a lead farmer that's been working with another group in a community for a very long time, they're a more reliable messenger essentially. So we've combined the elements of this knowing that farmers need to see to believe and that it's easier and more efficient to reach them in pre-organized mobilized groups and ideally through a trusted messenger, and have now combined that. So we're going instead with partners too, in addition to these larger agricultural affairs, to perhaps a training that they've been organizing for their own programs and sort of slotting in the element of irrigation and our technologies in particular but irrigation first and foremost.

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Chris Miller: Yeah, very cool. I want to build off of what you just said around capturing something that already exists. Ashland, you were touching upon it in your last comment about the role that the mobile phone in and of itself plays in your operations. I know that's also true for Ignitia and some of KickStart International newer models as you get into pay-as-you-go for solar irrigation, the ability to transact over mobile money as well. In any order, perhaps if the three of you could just reflect upon where you would be if the digital and mobile technologies were not already in the hands of many of the farmers with whom you work.

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[00:24:00] Lisa Smits: Interesting. We wouldn't exist I think because it's all about reaching out to those rural farmers. There would be no way we could offer such a low cost product such as four cents. That's what it costs, without a mobile phone.

Ashland Donahoo: I think for myAgro technically, we could exist and we've actually seen so we've been operating in the field since 2012. And so the digital space, the mobile space has evolved a lot in that time and we're driving a lot of efficiencies in our model. Where that's coming from is mobile technology and through decentralizing responsibility by placing mobile tools in people's hands at the village level. So there really wouldn't be a path to scale for us if we didn't have access to that and if we weren't able to interact with farmers and vendors at the local level through those tools.

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Jenna Rogers-Ra: Yeah, and I think it's you know for us ... Well it's interesting KickStart's in 16 countries and some of them have much more advanced mobile money markets than us. Kenya for example, the possibilities around stuff like pay-as-you-go just aren't a possibility in other markets where we work like Malawi. So we see both going on simultaneously across our programs and also given the age of the organization, we were able to sell the products previously through non-mobile, more traditional means. But it really is a driver of cost efficiency and just the ability to reach and communicate with these very hard to physically reach customers. So it's, yeah, more of an acceleration factor.

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Chris Miller: Right, noted. Thank you for indulging me for a moment on Global Innovation Week to reflect upon the importance of the market and what you all are doing.

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I want to pivot away from the smallholder farmer for a moment and talk a little bit about financial sustainability, which is something of course that is very important to all of you and everyone here. Taking note that all four of your companies get support from USAID in different formats, development and innovation ventures, securing water for food, powering agriculture, and then partnering for innovation with Bureau for Food Security and Feed the Future. What is the role of donor funding? What is its importance in your business model and as you think about longer term financial sustainability and attracting investment from other places? Whoever wants to go first.

Brian Lisot:

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I guess I'll lead that one off. StoreItCold is a company that's been around for 10 years. It's profitable; it's private equity owned. We've sold 35,000 units in the United States, this year we'll hit 40,000 and Guatemala and Honduras probably would have never been a consideration for the company without the grant money that we received. It played an instrumental role in giving us the opportunity to explore different business models in Honduras, in Guatemala. Figure out what works and then hopefully continue to expand upon our successes, not only in Central America but in additional international markets. It very much was instrumental in getting us to bring our technology to Central America.

Jenna Rogers-Ra:

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Donor funding is quite essential to KickStart's model. We see what we do as addressing a market failure and a government failure. It's simply there needs to be some sort of smart subsidy to design products of the quality that we believe smallholders deserve and sell them at a price point that they can afford. So we're continuing to develop new products up until now. We're creating a solar irrigation solution and the level of effort and resources that go into that design and especially because we do all of our design work in Kenya, we really close feedback loops with smallholders themselves. It's too expensive for the price point at which we need to sell the resulting products.

On top of that, all of these outreach efforts that we've been talking about that are really needed to actually unlock that demand and drive this behavior change, that requires a subsidy as well. That's how we apply our philanthropy in order to do that



while at the same time keeping our products in the supply chain is at market value. Everybody who sells a KickStart pump is making a margin, the factories that produce them is making a margin, and then we subsidize all of the other operations needed to actually get the impacts for farmers through donor funding.

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Chris Miller: Thank you. Lisa.

Lisa Smits:

Yeah. I think for us it has been, just to borrow your name for a moment KickStart. Donor funding has been enabling us to grow much faster than we would have done otherwise. We have very high costs to start but then as soon as we are running and have a number of subscribers that are farmers, the business model is very low cost for us. We can supply the same information to 10 farmers or 10 million farmers as it doesn't cost us a dollar extra to send it out. While I see data funding very much as a starting up new countries testing a little bit of different models that we wouldn't have been able to afford otherwise. We have a little bit of room for experimentation and making things better by that.

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Chris Miller: Ashland [inaudible 00:30:01]

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Ashland Donahoo: Yeah. So on myAgro side, we're basically driving as quickly as possible to a break even point where we are covering all of our field costs with our farmer payments. Last year we collected 1.1 million dollars from farmers but that wasn't covering all of our costs to operate. And so what we use donor funding for now is basically really figuring out how to innovate to reduce costs to serve farmers. We put it towards thinking about our model. A lot of the technological innovations we use donor funding and that allows us to further drive down our costs. We have a precision planter that solves a lot of problems that farmers face in terms of having access to labor and really productively farm as much of their land as possible. So we use donor funding to drive down the cost of that planter, do test farms to figure out how to make it work better, and so all of those things are really instrumental in getting us to that eventual break even point.

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Chris Miller:

Okay, I heard a number of things. I heard getting into new markets, adding new products to your existing line, driving down costs, being more efficient, being able to capture a larger audience presumably at a lower price, which is fantastic to hear. I imagine that's something you want to continue doing. Given that you are largely focused on smallholder farmers who tend to be price sensitive, not to be overly general or often some of the most underserved, living on a few dollars a day. As you look to your longer term sustainability and life beyond donor funding or with reduced donor funding, how do you balance that need to drive financial sustainability and that need to be able to deliver to a price sensitive smallholder farmer in a remote community somewhere in the world?

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Ashland Donahoo: I can take that one.

Chris Miller: Yeah, it's a tough balance to strike. Right?

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Ashland Donahoo: It is and it isn't at the same time. I think as we develop our model and become more efficient in reaching people, growing that market actually pays off in the end. Farmers tend to start with us and take a small test package for the first year. But next year, they grow that investment by 30 percent and so they're actually then able to plant more of their land with us and further drive their incomes. So that is a big part of our long term strategy by working with the same plans, we actually build their capacity and they become better and better customers for us. So, that's a big piece of it.

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Lisa Smits: I think for us it's been pretty essential to say that each farmer basically gets sponsored once but not twice. So if you're sponsored would have free full cost in order to gain your trust for let's say a month, then the next month you need to be a paying customer if you're gonna continue with us. By that you automatically get into a financially sustainable model as we have seen the farmers. It's a very sticky product because to know the weather and what's gonna to happen becomes a habit and the cost of that we've seen is the farmers want to stay on and want to know more. Because of that they've also seen a reason to pay for it.

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Chris Miller: Okay, makes sense.

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Jenna Rogers-Ra: We see a great need to create a broader appreciation for irrigation among all the stakeholders who are working with smallholder farmers, to international governments, to other organizations, to these private sector suppliers that are supplying other inputs. So a component of our work, we see as crucial to our long term sustainability, as well as the impact we're trying to achieve, is fostering that appreciation with the eye towards driving much higher, long term demand from other organizations. That would, for example, now appreciate irrigation can actually enhance all of the impacts that I'm trying to achieve. We will now be incorporating that into all of these programs, and generating the kind of bulk demand but in turn. Our supply partners start to recognize and continue bringing those products into those markets.

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[00:35:00] It's a different tipping point depending on the location and the broader enabling environment whether there are positive government policies around smallholder inputs that might make it a great technology for a government tender. These opportunities to really strike a very large level of scale or what we're creating and fostering and that will also support the long term sustainability of our work, our products, and again of irrigation more broadly.

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Chris Miller: You're starting to touch upon something you mentioned earlier Jenna and that's the importance of partnerships. You all slot into your own respective niches and to a certain extent you have a competitive advantage in your models and perhaps even a comparative advantage too based on where you are. The ideal world that we look at is across an Ag. value chain where we can start stitching the services

[00:36:00] that you all provide together to ultimately meet the truest benefit for the farmer, and their families to maximize profits, to increase productivity, to get their goods to market at a price point that is going to bring them significant return.

[00:36:30] I wonder if you all might be able to explore in your own minds, as you think about again long term sustainability, and the idea that there's a role for partnerships tradition and non traditional. What you look at, what are the products out there that you are thinking about that will give you further growth and success in what you're doing? And in doing so, how do we start to narrow the fragmentation that is currently existing with respect to innovations in agriculture, and the adoption of Ag. tech in the developing world.

[00:37:00] Jenna Rogers-Ra: Now that's a good question, I mean I would start by saying a product that's always on my mind and KickStart's mind is financing. Some of the other things represented right here on this stage and farmer friendly financing in particular. Figuring out what exactly it is about a financial product that makes it accessible to farmers is I think one of the strongest points of synergy there that we've been keeping an eye on. I don't know if you meant like physical products, other inputs.

[00:37:30] Chris Miller: No, No, No. Financing is a big important product out there. Anyone else want to weigh in on that?

Ashland Donahoo: I think, you know I think there's room even within the lay-away space, we've started to see more ... Before, myAgro was the only organization doing lay-away, mobile layaway. And now we're starting to see other people doing it and that's great. Cause I think there's still a big need for that to expand and lots of room. But of course, farmers, there's other financing options that might work really well, even for our farmers. So for example, that precision planter is the higher value. It's a tool, and it's fairly expensive even though we are driving the cost down. And so there's other financing options that might be really appealing to farmers. Market access is really important to farmers once they do produce that surplus harvest.

[00:38:00] They need to generate an income by selling it for a good price. Knowing what that price should be and being able to demand that price is really important. So there's room for more even within mobile, providing them with more tools. There's lots of innovations going on around that, and I think in a couple of years that'll look really different. Weather too, Weather.

[00:39:00] Lisa Smits: One of the things we have been thinking about a lot is to bundle our products with people that do have boots on the ground such as myAgro. People who are in contact continuously with farmers. In order to also get some kind of relationship to us with a physical person and not just only with a mobile phone. But we have also been looking at some information products such as insurance. Insurance hasn't

[00:39:30] been very successful in Africa when it comes to rain insurance or like farming insurances. A lot of that has to do with trust of pay outs at the end of the day. And we've been thinking if we design it in such a way that it does give the farmer expects it to be, perhaps we can drive that as a bundle to our product.

Chris Miller: [00:40:00] Excellent. Partnerships in the making as we speak. In our last few minutes we want to explore very quickly some of the biggest obstacles and challenges that you face and what's your look at into the future.

Brian, cold storage is an incredible obstacle everywhere in the world, getting a product to market and trying to reduce waste. What keeps you up at night?

Brian Lisot: [00:40:30] One thing that we've been asked about is the solar solution. So the infrastructure and the availability of electricity is a big obstacle for smallholder farmers and that's one reason why we work closely with the aggregators. They're typically more centralized and have access to electricity. A solar solution that we have continued to think about and will look at. And then again, just to touch on financing, even at 80 percent less expensive than commercial cooling systems, it is still cost prohibitive. So partnering with local financing options and the countries who work in this is very important as well. [00:41:00]

Chris Miller: Irrigation also, pretty big component here.

Jenna Rogers-Ra: [00:41:30] Yeah. What keeps me up at night is how we keep and get young people interested and involved in farming in Africa in particular. Looking at the dynamics of population, the average age of farmers and the age of most people and the tendency of young people to see the farm as a place they want to leave instead of a profitable business opportunity. Finding out what keeps them there is what keeps me up. Yeah.

Chris Miller: Weather keeps us up.

Lisa Smits: [00:42:00] For sure, for sure. I mean if I would write a book about our obstacles, it would end up something this high. It's just a constant challenge to work with small scale farmers because they are so diverse as both as human beings but also their needs. They are often living very rurally and they are hard to reach, which means we have to innovate every day at how to reach out to them.

Chris Miller: It all starts with inputs.

Ashland Donahoo: [00:42:30] I mean I would say ... I would echo all of those sentiments. Also, just with climate change, agriculture is becoming increasingly risky and it started off really risky. And so farmers very reasonably are very risk averse and perhaps becoming increasingly so and so that's a big thing we have to confront head on.

Chris Miller: [00:43:00] Certainly. Well we've just been able to touch upon it here. For those of you who want to hear more about what's going on in innovations in agriculture, there is a pitch session from 3:00-4:30 PM in Continental Room B. Lisa will be there. And for those of you who didn't get a chance to come by and speak with Ashland, Brian, and Jenna yesterday at the marketplace hopefully you'll have the opportunity today. I want to thank all the panelists for extending all of their insights to us and for being here. Have a good afternoon.

