



UNLOCKING SMALLHOLDER ASSETS: WAREHOUSE RECEIPTS AND ICT

AUDIO TRANSCRIPT

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AUDIO TRANSCRIPT:

Zachary Baquet: Good morning, everyone. Welcome to today's Ag Sector Council.

Judy Payne: This is Judy Payne. I am now the ICT advisor for agriculture in USAID's Bureau for Food Security. I've been at USAID for a few years now, but now I've finally officially joined the Bureau of Food Security. So I'm focusing on the use of information technology to help our Feed the Future projects reach further and have improved impact by the use of ICT. ICT means everything from mobile applications to low cost video, TV, and even the web, if that makes sense, and, of course, radio. ICT of course can be used in many ways in agriculture, from extension services, to strengthening relationships in the value chain, to accessing better information when it is needed, such as weather and price and where to deliver your harvest. Also, in managing farms and farm associations and agribusinesses.

This webinar is focusing on warehouse receipts and the use of ICT in them. It's really the first in a series of webinars I'm going to moderate over the next year or so. They will not all be in the Ag Sector Council seminar series, but you'll be able to see them posted in Agrilinks whenever we plan one. And if you have some topics you want to cover first, rather than second or third, please send me an email, and I will see if we can schedule those. We'll have a mix of practitioners, and we'll also have some lively discussion, I hope, that continues beyond the webinar. Today we're going to relook at the topic of warehouse receipts.

Scott Haller: My name is Scott Haller, and I will be talking about warehouse receipts and the Development Credit Authority engagement with them. I am a portfolio manager for the DCA, in the Eastern and Southern Africa portfolios. And I'm going to start, I think, today, with a little brief overview of what the DCA is, for those of you who aren't aware of it, and then I'm going to talk very broadly about warehouse receipts in general, and follow that with a specific look at the DCA engagement with warehouse receipt systems, and give an update on a program in Tanzania that we actually presented on a few years ago.

So the DCA, the Development Credit Authority, we're a small team that works within USAID and with USAID missions to encourage access to finance to underserved sectors of the economy. And we do this by working with missions and local lending institutions to identify groups of target borrowers and offer lenders a risk sharing agreement, which is usually in the form of a 50 percent guarantee for credit offered to those target borrowers. So, for example, we could make an agreement with Banco Oportunidade in Mozambique that says for every dollar that they lend to smallholder farmers, we guarantee 50 cents of any loss. And we repay them that in case of a default. So this lowers their risk, and incentivizes them to enter new markets or groups that need financing, and hopefully in a sustainable way.

So warehouse receipts – what are they? Essentially, they're just a document. They're a piece of paper or an electronic document that identifies the owner, the location, the quantity, and the quality of an amount of yield or inventory that's being held in a warehouse somewhere. The way the system basically works is an apex farming group or a cooperative purchased harvest yield directly from smallholder producers at a guaranteed price. They aggregate the inventory, place it in a secure warehouse to be certified, and then with that certification comes a warehouse receipt, which, essentially, itself, becomes an asset that can be taken to the open market, to commodities exchanges, it could be taken to the bank and used for collateral on loans. And what are the benefits of the system?

Well, first of all, it gives smallholder farmers an opportunity to access more markets further away. It can be taken into commodities exchanges directly, and essentially lower the transaction costs for borrowers and improve opportunity for smallholder farmers as a group to seek out more buyers and seek out the best price. But there's also other benefits just in improving the warehouse system in general. And, of course, this is loss reduction in the field to improve yield quantities. It lengthens the sales window for smallholder farmers, and it really turns them from price takers into price makers. The asset of the warehouse receipt gives them an opportunity to find top prices and negotiate for themselves. And once the system is developed, the more it's relied upon, and the more reliable it becomes, the more trust goes into the system, and therefore the more buyers will come, and the more the market will grow.

So there's a few optimum factors for warehouse receipt programs that the DCA has seen and other partners have seen that are required for success. And in the interest of time, I won't go into too much detail, but I've divided them here into system support and market support. And, very generally, what we see is that we need acceptance, recognition of the value of the warehouse receipt system, an understanding of both how the system

itself works and of the market that it's working within. And in addition, you need the infrastructure. You need the physical structure and you need the legislative infrastructure. So what we're seeing is, both with the market side and the system side, you need the enabling environment to be there. Financing is one element, but you also need transportation infrastructure, warehousing infrastructure, you need standardization across the market for quality and for weights, an appeals system – all of these things are required to be there for the warehouse system to work.

So where does DCA itself engage? I just spoke about the legislative side that needs to be there. Also, of course, technical assistance needs to be there. The capacity of farmers themselves to understand the system, and for the cooperatives to understand the warehousing program and how it works. Also, capacity for the banks to understand how the system works, how they're going to be repaid and what the timelines are. But the DCA itself engages in the financing portion, which is required for working capital loans and purchasing of stocks and things like that. So there are a few different opportunities for the DCA loan guarantees to help facilitate this warehouse receipt system. One way is pre-harvest financing – that's for working capital of smallholder producers, so for production imports, for transportation infrastructure, for registration, construction of warehouses, security of warehouses, things like that.

Now, the actual purchasing level, at the time of actual purchase when the cooperative or the apex group goes out and purchases the stocks and the yield from the farmers themselves, we can actually guarantee the loans that go into that purchase. So that allows the apex groups to go in and purchase the stock at the front end and then put it in the warehouse, aggregate it, and earn that certified warehouse receipt and then take it to the open market. So what is this specific DCA experience? There's three examples that I'll talk about. The first two are Uganda and Zambia, and I'll talk about them first. The reason I've chosen these two to talk about together is that there's a lot of similarities in our experience. First of all, they're both three year guarantees, which is fairly short guaranteed tenure, as far as most of our programming goes.

There was \$17 million total of guaranteed capital that could have been lent, and, together, with these two guarantees, they ended in 2007 and 2008 respectively, we saw very little utilization from the banks. The banks were unwilling to actually lend to the warehouse receipt system, so the farming groups in grain specifically in these cases, for a number of reasons. And one of those reasons is that there was capacity on both the bank side and the farmer side in understanding the market and understanding how the system worked. There was no buy-in and there was too little support service, there was too little technical assistance going into it. In addition, the legislative infrastructure wasn't quite there. For

example, warehouse receipt laws weren't there. Understanding of pricing wasn't quite there. There were very thin margins. And so it would seem too risky even under the guarantee to engage in.

And so really here's an example of what I was talking about before with the enabling environment. The enabling environment needed to be there for the financing portion to work and for lending to occur, and it was summarized very well by my colleague, Kofi, who was a former portfolio manager himself and current investment officer at DCA. In short, the conditions were not in place to successfully bridge the knowledge gap that would help transform the marketplace to accept warehouse receipts as viable collateral. The banks willingness to disperse funds against warehouse receipts in a timely manner is dependent on the creation of just such an environment. So the third example is Tanzania. This is an update we did previously on Tanzania, when the guarantee was just getting underway. So, what are the results? And how is it set up?

So the design itself was a ten-year deal, a ten-year risk sharing agreement with CRDB bank for \$20 million total lending to agriculture value chains in general. And initially you see right off the bat that the ten-year tenure is different from the three-year tenure and this gave the bank some time to adjust its lending product and understand the market that it was engaging in. And the way the system was supposed to work is that initially AMCOs were to be organized and technical assistance was to be given to them, and the AMCOs were Agricultural Marketing Cooperative Societies. These were cooperative groups that were to aggregate the actual stock and represent the smallholder farmers with the warehouse receipts.

So initially the organization was to take place. After that, the AMCOs went to purchase the stock from the smallholder farmers at 70 percent of the predetermined farm gate price. They were to aggregate those into the warehouse, and then they were to earn the receipts at that point. Finally, the AMCOs were to take the warehouse receipts to open auction to find buyers. After the purchase, the AMCOs would take 30 percent, repay the 30 percent that they owed the farmers, and then any profit on the top of that distributes 60 percent after paying back the loan to their actual members. And you can see on the slide the actual structure right there, and you can see at which point the DCA engages.

So what were the results of this Tanzanian product? Well, first of all, unlike Uganda and Zambia, there was full utilization, and there was a specific of course on the warehouse receipt systems in this deal in the Lindi region in cashew nuts. And of that \$20 million that was to go to the overall agricultural value chain, \$9.2 million went directly to the AMCOs that were in the Lindi region for the cashew nut warehousing system. 49 AMCOs total were engaged and lent to – and that's approximately about

5,000 to 6,000 farmers when you aggregate the number. There was an improved system, the actual warehouse receipt system was improved during this process. The farm gate pricing that was being used for this initially, those initial purchases from this, from the farmers, they weren't market-based, and through this engagement, through the guarantee, CRDB bank, with the apex groups, and the AMCOs, actually engaged the government to change the way the pricing worked to make it more effective.

They also initiated a law that's now been signed into practice that requires the purchasers at the auction to provide down payments so they can't abandon the stock essentially in the warehouse once they've agreed to buy it, because there was an issue where some of the buyers walked away from the deal, sort of leaving the AMCOs without a buyer. We also saw bank success. CRDB was able to revive the Lindi branch, which was closing before this guarantee was provided. And sustainability in the process. So the bank, actually beyond the guarantee, once the guarantee was fully utilized and without a new guarantee, committed \$24 million to the cashew nut sector. They also rolled out this AMCOs warehouse receipt system to other regions, to two other regions beyond Lindi. And in 2009, we saw a very good return going back to the members after the sale at auction.

So what was different and what was similar between Tanzania, Uganda, and Zambia? Well, there was similarity in the price issue. In Tanzania, the farm gate prices weren't being set at the market level. In Uganda and Zambia, prices were fluctuating, they were unpredictable, and there was little understanding of how to manage that actual price risk on the bank side and the farmer side. There was also limited understanding on the government side. In Uganda and Zambia, we saw it all levels. In Tanzania, we specifically saw it at the local government level. There were also issues with producer expectations on the prices that they could get on the open market and the speed at which they could be repaid. There was also transportation constraints in all three scenarios – transportation, getting this stock, getting the yield to the warehouses in the first place, and, after purchase, getting it to the buyers.

And, also, capacity issue. Capacity development. Technical assistance needing to be interjected at the farmer level, at the cooperative level, and at the bank level in all scenarios. And we saw, too, greater effectiveness in Tanzania. So what was different? Well, the bank buy-in was different. CRDB as a partner was fully engaged. They were driving the strategy. They accepted the full risk on the receipt. They understood the market. And they led the technical assistance which was very important. They had a mobile unit that actually went out and engaged the farmers in the field. They engaged the AMCOs at the warehousing level, and they helped them

not only in understanding the system, mostly in financial management, and in actual warehousing management itself – pest control, humidity control, and etcetera.

They even helped the AMCOs find buyers when they couldn't at the auctions. They also engaged the environment, the government, which was totally unique. The bank, like I said, worked with the AMCOs groups to actually change policy in the warehouse receipts system at the pricing level, at the terms of down payments, at the auctions, and really just working and driving the improvement of the system itself. So looking ahead, what have we learned? Well, we've learned that access to finance from the DCA experience is just one piece of a much larger puzzle. You need that infrastructure there, both the physical infrastructure of the warehouses, the proximity of the warehouses to the farmers is very critical, transportation infrastructure. You also need the legislative infrastructure to be there. You need the laws in the books. You need the buy-in of the certification process. You need the buy-in and trust of the appeals process. You need all these things in place really to make an effective warehouse receipt system.

And what's the evolution of the idea? Well, I think there's going to be an emphasis on the tradability and transferability of the warehouse receipts, improving commodity exchanges as an outlet and a location to find buyers and to market those warehouse receipts for the farmers. Transparency is critical, and we're going to see improvements there. I think as technology improves, receipt databases, e-warehousing, which we're going to hear about in a moment, all of these things are going to help, I think, to make us a more efficient process, a more fluid process, and a more transparent process. And, of course, DCA, as an organization that can offer loan guarantees, we hopefully will be interjecting guarantees to free up capital throughout the entire system, whether it's for technical assistance providers, whether it's banks who are offering loans to farmers who are engaged in the system, or to companies that are helping to make the system more modern, more effective with mobile solutions, etcetera. So, thank you very much.

Judy Payne:

Thank you very much, Scott. Erin, are you ready?

Erin Connor:

So my name is Erin Connor. I work for Grameen Foundation. And today I'll just be sharing a bit about a pilot we're implementing here in Kenya, where we're bringing the warehouse receipt system to smallholder farmers through the use of technology. So we have funding from USAID's MPEP group to develop and test methodology for an e-warehouse where we essentially connect farmers to information services and training on post-harvest storage and management, financing against the grain that they're storing, and then ultimately to larger scale buyers and markets. It's a

two-year funding, and it's we're in our second year now. We're working in close collaboration with an agricultural NGO here in Kenya called Farm Concern International – they work exclusively with smallholder farmers to help organize them and build capacity and essentially commercialize villages and build them up as trading blocs.

We're working with them to leverage their existing network and methodology to deliver technology solutions that provide farmers with additional training and information and financing. So I want to start just by profiling a typical farmer that's registered in our e-warehouse. Jennifer has two acres. We collect poverty data using our partners out of Poverty Index, and so we know that there's an 84 percent likelihood that she's living below the \$2.50 a day poverty line. She grows maize and beans. And in her last harvest, she harvested eight bags – these are 90 kilo bags. Of those, she kept half for household consumption and sold the remaining four about a month later at the local market. She did store the four bags at home in plastic bags until she sold them at the local market. So, presumably, she held out as long as she could until there were immediate cash flow needs that she – that required her selling her grain.

She never received any training on post-harvest management, had never taken out a loan, and what asked what her top three information needs were, she cited post-harvest handling, market information, and pest management. So Jennifer's situation is really illustrative, I think, of the common challenges facing smallholder farmers in Kenya and pretty much globally. And the three key challenges we see are inadequate crop storage – so for Jennifer, with only four bags to store, she didn't really have access, she didn't have the – she didn't meet the minimum volume requirements to purchase stake in a larger physical warehouse, but had never received any training or information on how to store dry store grain properly at home or at a group level. Estimates are that 30 to 40 percent of grain that is stored at home is lost due to spoilage, infestation. And there are some easy tips and information that farmers can follow to help ensure the quality is maintained of their grain while they store it.

The next is lack of access to financial services. At harvest time, prices are lowest. They wait just a few months, they can sell their grain at prices about 50 percent higher, but many of the smallholders just really don't have access to the type of financing that would allow them to smooth their income over a few months and benefit from much higher prices. And then limited market access. Jennifer had only four bags to sell, so ended up selling at a local market. Many sell through brokers, and so they just – they don't benefit from higher prices, as a result of group bulking and selling. And so the e-warehouse solutions are really customized to address the extreme needs through access to information, training on how to store your grain properly even if it is at the household level, connecting these

farmers to financial institution that can provide advances against the grain that they're storing, and then aggregating the information that we have stored in a database to help farmers collectively bulk and sell.

So how it works – we work, as I said, with Farm Concern through a network of what we call village knowledge workers, or VKWs, who are farmers and trusted leaders within the community. We equip them with smartphones, which has information, agronomic information downloaded onto it. We've also customized Farm Concern's curriculum on post-harvest storage and management, and have digitized that, and made it available on the mobile phone so that these VKWs can provide information and training to their fellow farmers. The phones also serve as a two-way information flow. So not only do they disseminate information and training to farmers, but they're able to collect information from the farmers as well. And so if a farmer is interested in participating and accessing the training and potential financing, they register with a VKW.

So on the right-hand corner here, you see the farmer registration survey. So when a farmer registers, the VKW collects a wide range of information, demographic information, poverty data, national ID, phone number, and then they also collect baseline information to understand what they've done in the past, whether they've accessed credit or information before. And so in that first slide where I profiled Jennifer's situation, all of that data, including the photo, I pulled out from our e-warehouse, which is the back end database where all of these surveys feed into. Going to the next slide, at harvest time, you see e-warehouse here that is really a virtual warehouse, or a back-end database that we manage on the Sales Force platform. And so when we register a farmer, that creates a farmer record in e-warehouse, and then at harvest time, the VKW collects information from the farmer on quantity and quality of the grain that they're storing, along with the GPS stamp so we know where the grain is stored.

They have moisture meters, so they measure the content and enter that into the e-warehouse. If it's not within an acceptable range, they can't enter it into the e-warehouse. At that time, they're also asked if they're interested in taking a loan. If they are, there's a couple additional questions. That goes into the e-warehouse system. And then the idea is we're building integration between our database and the financial service provider system so they can extract the relevant farmer details they need in order to make a credit decision and then issue an advance directly to the farmer over mobile money transfer of up to 50 percent of the value of the grain at harvest time. Then, during the storage period, which is typically about three months, there's a number of measures we put in place to monitor the grain that's being stored. The grain can be stored at the household level,

group, or village level. So there's a number of checks and balances we need to put in place to minimize the risk of side-selling.

One is group guarantee with the financing. Another is the VKWs have a survey that they collect which is essentially a shorter harvest survey to update the quantity and quality of the grain that's being stored. And then we mobilize the farmer groups as well that Farm Concern works with, to check on the grain. During that period, we're monitoring the market prices and sending fortnightly SMS updates to the farmers that have harvest information in our e-warehouse so they can monitor the price increases. And, at that same time, Farm Concern is monitoring the prices, identifying buyers. They have visibility into the aggregate amount of grain that's being stored in these commercial villages through the e-warehouse.

And then at sale time, when the buyer agrees on an amount and price, the farmers collectively, physically book their grain and bring it to a collection point where the buyer meets them, and then the buyer deposits a payment into an e-warehouse account, and, based on the sales details collected by the VKW at sale time, and the information we have through the integration with the financial institution system on the outstanding loan balances, we, within the e-warehouse, can determine the farmer allocation, and, from that, we make payment directly back to the financial institution on behalf of the farmers to repay their loan, and they're the first to be repaid, and then we repay the farmer the remaining balance over M-PESA, or mobile money.

Also, at when a sales survey is deposited, it triggers an SMS that is sent to the farmer to confirm the sale. Basically it says, "You sold this much at this price. This much will be repaid to the financial institution on your behalf. And you can expect to be repaid this much over M-PESA within the next 48 hours." So that is the concept. We have developed and tested most of it. It's a very complex and innovative concept and has, therefore, been pretty challenging in implementing. What we have done is recruited the VKWs. We're piloting this in 30 villages, so we have 30 village knowledge workers that have been recruited and trained. We've developed or really taken a lot of content from existing sources, as well as FCI's training, and digitized that, delivered the information through the VKW network. We developed these customized mobile survey applications using our Chair Works platform and the e-warehouse database and the integration between the surveys and the database.

We've registered over 5,000 farmers in the e-warehouse and have detailed baseline information on all of those farmers. We've also developed a financial product and extended these in the – in select commercial villages. This, by far, has been the biggest challenge. So we partnered with a financial institution. The one we started with pulled out just a couple

months before harvest. They were bought out by another company and went a different strategic direction. Then we partnered with another, and there just really wasn't time. So in terms of developing technology solutions for ag when you're tied to harvest timelines, it can be a big challenge. With maize harvest in Kenya, it happens twice a year, every six months, so if you don't have something right the first time, or the product ready to go, you have to wait another six months before you can really test it out, and so that's been a limitation for us with this project.

Tied to that is just that we were overly ambitious in trying to develop a fully integrated model that's incredibly complex all at once, and wanting it to be delivered kind of as this integrated model at the outset. In hindsight, we really should have staggered the development of the technology as well as the products we were offering on the ground. In developing or introducing an ICT for ag project, we really needed to be more mindful and intentional about change management, and working with our implementation partners – the financial institution, the agricultural NGO – in making sure that when technology replaced a lot of processes or roles that people played, there needed to be more comprehensive training and communication about what that meant for staff, and how to really support these changes in technology appropriately.

We also found that there's tremendous demand for more affordable and secure storage facilities at the village level. With this project we went into it really wanting to support home-level storage and make provide more training to farmers on making – on following better practices to ensure the quality during storage period, and found that no one's really comfortable with home storage, including the farmer's themselves. No one wanted to guarantee loans for fellow farmers that were storing at home, and, if given the choice, they would much prefer a village level storage facility that's accessible and affordable to them. On the financial sustainability side, we developed a financial model for the e-warehouse, but at this point, it's pretty hypothetical, and it's assuming we can generate revenue from a few different sources, such as the financial institution, buyers, input suppliers – when we introduce that component. But we – that's really on us to prove the value before we can actually charge fees and generate revenue.

Also, in working with the financial service provider, we also thought that the potential volume and commercial viability of the project would be enough to entice them to participate, and found that with one partner, when they saw that the volume was not going to be that big that harvest, they reallocated resources to another project. And to really ensure that the project does have the commitment and resources needed to ensure success, a budget built in to the financial service provider, I think, is really important until the – there's profitability that's been proven. And then, lastly, we incorporated human center design into the development of the

financial product, but we're not as rigorous in applying user center design in the technology development or the agricultural services.

And I think we could have saved ourselves a lot of time and effort if we'd done that from the very beginning – gone to the field, met with the farmers, made sure that throughout the time we're developing the technology and extending the services that we're checking in and making sure that they're developed in the way that they need and delivered in the way that they need. So these have been some key lessons for us that will certainly inform how we'll move forward with e-warehouse version 2.0.

Zachary Baquet: Okay. Well, I'll move into Q&A. And so __ coming in is from Dick Tinsley, with Colorado State University, who is asking, "Who determines the time of sale, the farmer or the warehouse?"

Scott Haller: Well, in our example, what we saw in Tanzania, the – it was the warehouse that determined it, I believe. It was the warehouse that was taking it into the auction to go find borrowers. So it was the smallholder farmers were providing the yield as the warehouse was going to get it to aggregate it from them, and then there was the warehouse that was taking it on to the auctions. So the farmers had to wait, I guess, until their final 30 percent of the farm gate price, until the warehouse had been able to make a sale, and it was the warehouse that would often make the decision to look for search for more buyers to sit on their stock and search for better prices. That wasn't coming from the smallholder farmers themselves. That was coming from the actual AMCOs in Tanzania. They were making that decision.

Zachary Baquet: Okay. This is for Erin. "Is Grameen's e-warehouse database a proprietary system?" And, also to Erin, "How scalable and sustainable is the Sales Force platform for use elsewhere? I think the platform is available to others?" That was a question. And, additionally, your software developed on that platform. Erin?

Erin Connor: Yeah. The database is on the Sales Force platform. A lot of the information – there's a lot of detailed information on the farmers, so the data itself is not necessarily open to the public, but Sales Force is a system that's available to any organization interested. It's a customer relationship management software, as well as a platform where we – you can develop a lot of integration with mobile data collection applications. Grameen Foundation has a Care Workshop that we developed where we do customized data collection surveys, and that integrates with Sales Force platforms. So that's something that other organizations of interest can also access.

Zachary Baquet: Thank you. So, another question is from Mariqua Olson, with USAID Mali. “Are these bags the oxygen-excluding triple bag system? Or the standard storage bags?” Yeah, I believe so. Or, Mariqua, were you asking that of the general – the chat group? All right, well, we’ll come back to that.

Erin Connor: — —.

Zachary Baquet: Sorry. Go on, Erin.

Erin Connor: So for e-warehouse there’s not one bag, there’s a few different types of bags that are considered acceptable for e-warehouse storage. And so we don’t provide the bags. The Farm Concern does help connect them to the technology that’s needed to store. But we don’t offer the technology ourselves.

Zachary Baquet: Deev Lin, independent consultant. “What is the sustainability,” this is for Erin, “What is the sustainability of all these interactions provided by Grameen?”

Erin Connor: So Grameen Foundation, in this case, we really play the role of developing the technology and the integration between the ___ service provider and the e-warehouse. We do rely heavily on agricultural actors that are on the ground that are working with the farmers and that has field networks that can deliver and collect information from the farmers. And so we all kind of play our own role. And so in terms of scaling up, we would identify other agricultural actors, though we’re not going to play that role ourselves. We would really leverage existing networks out there to really be the boots on the ground and to bring these services, and also helping monitor market prices and connecting the farmers to potential buyers. It’s not a role that we really see ourselves playing.

Our role in this is developing the technology to enable it, and so we’ll never be the lender. There will need to be a financial institution involved that will extend advances, and an agricultural actor also involved, working with the farmers. But for us, the role of technology to enable these interactions is _ _ _ _ .

Zachary Baquet: Okay. Thank you. Any other comments? Nope? All right. Next question. Casey Chang, from the ADM Institute for Post-Harvest Loss at the University of Illinois, Urbana-Champaign, asks, “What are the challenges to scale up the warehouse receipt systems or e-warehouses?” Which is a very key question for Feed the Future Initiative, where we’ve been working quite a bit on scaling up ag technologies. Anyone on the panel?

Erin Connor:

On e-warehouse, I mean we're really – we will have to rely heavily on partnerships, and we really see this thing multi to multi-platform, where we would work with multiple agricultural NGOs in different geographies and multiple financial institutions, and so for us the next step, really, with the pilot, we developed the technology necessary to conduct the pilot, and we're really looking now at the overall IT architecture, and trying to build something that can be scaled where it is a many to many type of platform. So I think that's a challenge that we see in scaling up, but it's also something that would be really necessary to support scale.

Zachary Baquet:

Scott, do you have any thoughts on scaling up? Okay, well, I'll move on to the next question. This one comes from Haneke Lamb, with NRI in the – based in the UK. The question goes, “When farmers store in physical warehouses, the warehouses are often certified and regularly inspected, which adds to the trust in the system by e.g. financial institutions and insurers and reduces risk. This is absent in the e-warehouse system, but seems to be substituted by the group guarantee system, village knowledge workers, and quality quantity surveys. However, are the transaction costs in the latter system not too high for it to be commercially viable once donor support phases out?” Erin, do you have thoughts on this?

Erin Connor:

Sure. So yeah, you're absolutely right. There's not the same type of certification and security that you have with a physical warehouse, and we tried to build in a number of control mechanisms to minimize risk, and that includes the role of the VKWs, the farmers, the group guarantees, the – and the costs are much less. The compensation for the VKWs would need to continue, and Farm Concern's plan really is to have that be something that the community pays for over time to – once – when they really see the value of the information that they're getting and the role that the VKW is playing, taking over more of that compensation. In online, we see agricultural players being integral to this model, and in some cases I think they will have a sustainability plan for how they would continue providing these services when donor support ends. But in many cases, we would assume that the agricultural actors would need to have some funding outside of ours to support these activities.

Zachary Baquet:

Okay. Thank you, Erin. We'll go to the next question. This is – comes from Josemo Roca in Silver Spring, Maryland, who is with the ADRA International. Goes, “Scott mentioned about the commodity exchange as an important player in warehouse receipts. Can you please give an example of how you've been able to work with commodity exchanges? Could the commodity exchanges be the facilitators of the warehouse receipts, or is it more a sort of information provider?”

Judy Payne:

So, Scott, this is Judy. Have you worked at all with commodity exchanges? Ducey here is just a little experience. So I would comment

that commodity exchanges are a huge step behind ear house warehouse receipts – *[whispers]* oh my God – and a step that should be taken cautiously. There may be some experience in East Africa *[laughs]* that somebody could comment on, but so far the commodity exchanges haven't really played out very well. There is a regional one that is based in Rwanda that I came across last year that maybe somebody can comment on in our box, in our chat.

Zachary Baquet: Okay. Thank you, Judy. So, next question comes from Linda Fophony, who is a consultant with OECD in Paris. She asks, directed at Erin, “The e-warehouse is innovative, but seems complex for easy use in the least developed countries. Has the system been used elsewhere with success? How profitable for warehouses and producers?”

Erin Connor: Sorry, can you repeat just the last part of the question? How profitable...?

Zachary Baquet: How profitable for warehouses and producers?

Erin Connor: Oh, okay. So this pilot is the first that we've done in Kenya. In some ways, it's an easier place to implement something like this because of the prevalence of M-PESA and using that mobile money transfer platform to disperse loans and make payments directly to farmers. We are looking at introducing it in Uganda, where we actually have a field network of community knowledge workers that we do manage, but I'm not aware of any project of this nature where it really provides information, financing, and markets the technology being implemented or tested anywhere else. In terms of profitability, I mean we're not using the larger physical warehouses. We are looking at more village level storage, and actually I think in the next iteration of this, I think we look more at village level storage that farmers could access financing to manage and support.

And I think there's demand for it, and I think if we're working with financial service providers, there's a lot of different financial needs and products that could be developed in response to that need. And something – another lesson that we've learned throughout implementation is we did a lot of additional technology development in the second harvest to make more and more of the surveys multiple choice or smart entry, where it needed to be a certain number of digits, certain things needed to be completed. We have data analysts on the back end that reviewed the content that comes in as well as __ VKWs that things don't look quite right. Really, at this point, with the financial institutions that we've worked with, they – in order for them to get comfortable, I think they wanted loan officers to be a bit more involved, and to verify the stock before they would extend loans.

And so they've played that role, though I think the role of data validators is important, and is something we haven't really built into this subject, other than SPI or Farm Concern, still maintain some manual records that we can use to double check.

Zachary Baquet: Okay. Thank you, Erin. The next question is from Steve Lin. "While village level storage is great for buffering farm producers against lean season high-priced grain purchases, I don't see how it fits into warehouse receipts, since there isn't a third-party guarantee warehouse stores that enjoys the confidence of lenders. Is there experience to the contrary?"

Judy Payne: I don't have a – this is Judy. I don't have an answer to that question, and maybe Erin has answered this indirectly, but I know that this is your second season, I think for the e-warehouse system. It surely is an intriguing model, and, as you say, a complicated one. Your financial service provider is a critical player in all of this. How many seasons, how many more seasons are you going to be able to keep this up? And I know you've addressed the sustainability question, but I guess can you anticipate some other key partner that you'd want to bring in, a strategic one, to see if this can take off in Kenya?

Erin Connor: Yeah. So the e-warehouse has had two seasons, and this is – this is part of the challenge that I was describing before, where we really are tied to the seasons. And it's a two-year project, but it really includes only two full seasons, because it needs to include several months after harvest to include sale and repayment of loans, and so the USAID project will end before that happens with the third season. And so what we're looking to do now is focus our attention really on the redesign and identifying partners. We do have a couple financial institutions that are very interested that we've been talking to about working with when we launch the next pilot, but at this point, that's what we're working on, is doing some modifications to the project design, identifying partners, and then launching the plan for carrying this out after the next harvest.

Judy Payne: Thanks, Erin. This is Judy again. USAID is involved with our partners in the mission in Washington with thinking about how to scale. And one of the things we're learning is that projects have to think differently about project implementation and think way beyond the project. So in starting the wheels turning and the players involved so that the service gradually goes beyond the park project and is out of the control of the project implementers. This is really quite a different perspective for USAID teams, as well as our implementing partners. So, for example, this project was a three-year project, which is typical, and clearly you're not going to be able to scale in three years when you only have two harvests. Thinking differently about scaling, and how we might have designed this, Erin, do you have any comments about how you might have done it

differently? I mean would you just have asked for four years, or will Grameen be able to step in and provide you the funding to think strategically about scaling with one of these other financial institutions?

Erin Connor:

Yeah. I mean it's a good point. The project was two years, and definitely not enough time to really do everything that we had set out to do. And I think I mean one way of looking at it a bit differently is structuring the funding so that it's around harvest time, rather than two years from start to end date. If it had really been more with the harvest cycles and the agricultural periods in times, that might have helped. I also think we certainly needed more than a two-year runway to get this to the point where we've proven everything and are ready to scale. And I think that's really what's driving this version 2.0, in having a second pilot where we can certainly leverage all of the lessons learned and the technology developed and it won't necessarily take another three years, but I think probably another two before we really have proven the concept over a couple harvests, and are comfortable with scaling this. And so what we're doing now is looking for some longer-term funding to be able to implement another couple of years, and then the plan really would be to execute on the strategy to become financially sustainable.

Judy Payne:

Good. Thank you for your thoughts on that. I know it's a struggle. It sounds like if you go forward with additional funding requests, you might be bringing in a strategic partner, which would make this some sort of public-private partnership, which is sometimes easier to get funded. We do have a question about impact in this area. I know it's a little premature to measure the impact of what you're doing, but do you have researchers interested in doing a rigorous evaluation of the impact of what you're doing?

Erin Connor:

We do, actually. We're working with ITA right now in carrying out qualitative research, and they've actually accessed funding separately through the Agricultural Technology Adoption Initiative to support the qualitative research that they're conducting. But they I think even approached USAID with I think it's out of SIKa in Berkeley where there's professors that are very interested in carrying out an RCT when we get to the point that we want to scale. And so we've made that – we had hoped that that would be able to start early next year, at the end of this pilot, and we're not ready to do that. But we've definitely been talking to researchers who are interested in carrying out an RCT around the e-warehouse when we're at that point.

Judy Payne:

Great. That's good news. Do we have any more questions?

Erin Connor:

Thank you.

