

Colombian Cacao Industry Embraces Digital Transformation to Improve Farmer Outcomes while Ensuring Traceability and Reducing Deforestation

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THE WASHINGTON POST | TECH - Starting today, an innovative Colombian based cacao processor (the Company) is rolling out [Growing Good], a new traceability and monitoring program that ensures the adoption of traceability technology in cacao farming down to the farmer plot level. Combining the traceability data with ongoing satellite imagery provides the Company with the ability to prove the cacao they source and refine causes near zero deforestation. The traceability data also drive's operational improvements and business efficiencies for the Company and is used to provide data driven consultations with the farmers. Paired with access to technical consultations this enables improvements in long term growing and harvesting trends of farmers improving their bottom line. This makes [Growing Good] a win-win for all parties.

Global consumers expect the products they consume to be 'sustainable' and not a direct contributor to deforestation in forest rich regions like South America and Columbia. To date, it has been difficult and expensive for farmer farmers and cacao buyers like the Company to implement and adopt robust, real time traceability of cacao from the farmer's farm to the point of export to prove their product is deforestation free. Integrating automated deforestation detection capability via satellite monitoring with product traceability is even more expensive and technically difficult. Developing a cheap, open source traceability and deforestation detection system that farmers and industry want to adopt presents an opportunity to make cacao supply chains more sustainable globally and especially in Columbia.

As of today, existing and new farmers that sell to the Company will be enrolled in the new [Growing Good] program that enables 'deforestation sensitive' traceability of cacao crops from the farmer's plot to the point of dried bean resale to upstream buyers. 'Deforestation sensitive' means the traceability data is compared in near real time to satellite imagery that automatically detects nearby deforestation activity. QR codes are applied to all cacao carrying containers like buckets, bins, boxes and drying tables. When Company staff pick up wet cacao at the farmer's plot, staff choose the farmer's profile in the smartphone application, or scan the farmers QR code, and scan the buckets that the farmer's wet cacao are poured into. Staff input the same information that is previously only on the paper receipt including the weight, grade, and price paid. Last known location data of the staff is recorded through the smartphone's GPS. From then on, every time the cacao transfers to a different container, staff scan the QR code on both vessels, enabling traceability throughout the fermentation, drying, and bagging process. On the back end, proven deforestation detection capabilities are used by company analysts to monitor deforestation activity compared against the traceability data and mapped farmer plots.

"We did a pickup at the Hernandez plot last week for the first time." Said Mateo, company Ops manager. "The week before, we sent the farmer the pickup schedule, projected price, and harvesting instructions via text and, with this particular farmer a direct phone call because he doesn't trust the automated messages yet. They confirmed by texting '1' which automatically updated our pickup plan and projections for next week which we can see and modify as needed

in our office. All our guys have to do at pickup is punch in the ID of the grower plot in the app and then scan each bucket that gets loaded into the truck or transferred into other containers back at the plant. Some farmers have the QR code on their bins that we scan to make it that much easier instead of punching in their name. In the office, we can track all of that information basically in real time so we know what fruit, how much, etc is in which part of the process and compare that against our quantity and quality control measures which we use for continuous operational improvement, projections, etc.”

Company reps also use the traceability data to streamline and issue receipts via text to each individual grower. Data driven trends of each farmer like quality and quantity harvested over time are used for personalized consultations to coach farmers through growing and harvesting best practices.

“This new approach to traceability is improving farmer outcomes while ensuring traceability and deforestation monitoring.” Said Vikram W., Head of Climate and Carbon Finance at the World Bank. “Digital transformation in farmer agriculture also represents a clear business opportunity for industry to deliver on their commitment to producing goods like cacao sustainably.”

To learn more about the new open source [Growing Good] traceability capability visit [https://www.\[GrowingGood\].org](https://www.[GrowingGood].org)

Notional Scenario - User Experience Testimonials

Farmer (orientation)

“I started selling to the Company for the first time this month.” Said Maria, cacao farmer in an active cacao growing region of Colombia. “My buyer rep came out to our farm yesterday for the first pickup and orientation. He gave us a ‘promise’ bucket that had a welcome package in it including brochures on what we could expect being a seller to the Company, cacao growing and harvesting best practices, and some information on why it’s important not to cut down too many trees. The material was easy to understand. The biggest thing I took away was the Company’s promise to help us improve our quality and yields over the long run by coaching us. I walked the rep around the farm and then we paced off the borders of it. He said it would help the Company to map our plot so they could prove that we don’t clear the forest for new crops. If we do clear land we won’t be able to get the price premium anymore.”

Farmer (2 years from orientation)

“We’ve been in the [Growing Good] program with the Company for almost 2 years now.” Said Maria, cacao farmer in an active cacao growing region of Colombia. “We get our receipts over text message within a day of pickup and the payment follows. I love the ability to communicate using texts with the Company so we know the right timing to harvest for pickup, pricing, and

other stuff like that. It's so much easier to coordinate the timing of our pickups, since we can see the driver's location via text. Our daughter Ana just got a smart phone. She pointed the phone camera at the code on the bucket and it pulled up all the history of the cacao that we've sold to the Company over the last 2 years including weights, price, and quality. It all matched up with our paper receipts. Ana also showed us how our yield's have improved over the last two years on her the phone thanks to the Company coaching us on best practices. Our rep has been giving us that same information on paper printout twice a year since we started. We've been following the advice of our company rep, along with the 3 training sessions we had with the expert the Company sent out to us and we've noticed a real difference. Sofia said there is a bunch of training content and videos on the smartphone now too. The Company really is making good on their promise to help us improve.

Company Buyer/Operations

"We did a pickup at the Hernandez plot last week for the first time." Said Mateo, company Ops manager. "The week before, we sent the farmer the pickup schedule, projected price, and harvesting instructions via text. They confirmed with a '1' which automatically updated our pickup plan and projections for next week which we can see and modify as needed in our office. All our guys have to do at pickup is punch in the ID of the grower plot in the app and then scan each bucket that gets loaded into the truck. After weighing, they manually enter in the transaction info reflected on the paper receipt so we get all the normal transaction data including weight, grade, price paid, and location via GPS. Once they get back to the plant, they scan the bucket they are unloading and scan the new container before they dump the cacao en baba in. The same goes for the guys that work the fermentation bins, drying tables, and bagging process. In the office, we can track all of that information basically in real time so we know what fruit, how much, etc is in which part of the process and compare that against our internal quantity and quality control measures which we use for continuous operational improvement, projections, etc. The transaction data with the farmer gets rolled up into our accounts payable system, verified and then payments issued to the farmer within 24 hours of pickup.

Company Sustainability Analyst

"The new deforestation detection system gives us a bi-monthly view from satellite data on deforestation activity in our growing region so we can ensure our growers aren't actively clearing forest." Said Maria, Company Sustainability Analyst. "We've got trustable data on who exactly we are buying from and where that cacao is being collected. We had a scare last week when a 100-hectare plot was cleared about 3 kilometers from one of our new farmers. Along with the ops manager we visited the nearby farmer and had in depth discussions with them on what happened and if they were involved. It turns out it was another nearby farmer that our client didn't know well who is aspiring to set up a cattle operation. The satellite data let us map and memorialize that forest clearing so we know not to buy cacao from that plot in the future."

Company Leadership

"This new system represents a meaningful and affordable way to improve our business outcomes while proving to the world that we source cacao responsibly and sustainably. We knew that we needed to modernize and start approaching digital transformation in our cacao business or industry problems like deforestation, quality control, and productivity would start to choke the business. Said Company Board Member, "Our upstream buyers and the NGO's trust us more than ever now to be doing the right thing since we have full traceability of our product in

Colombia. Not only that but we are starting to see better product quality and better margins. This is the future one way or another, it's just a matter of timing and we are ahead of it. Our competition is already trying to catch up which makes us confident we are headed in the right direction.

NGO

"Finally, a forward-thinking cacao company has implemented a real, trustable traceability solution that farmers and the Company alike are adopting" Said Amanda, VP Deforestation Solutions at XYZ Non-Profit. "Immutable ledger technology makes it so we can trust the results. We hired an independent cryptologist to audit the tech. She came back and said that there is basically no way that the record can be compromised or manipulated after it has been input into the system. She showed me some of the dizzying math equations to prove her point. The Company lets us view the records confidentially and we compare it to what we are seeing with deforestation in the area. We have known that the Company and their partners are doing their best to produce sustainable cacao, but now we know for sure.

FAQ

Farmer

Q: What's in it for me? Why should I let you trace my cacao and maybe get me in trouble for something I didn't do?

A:

Q: Do I have to have a smartphone for this to work?

A:

Q: What if I still want paper receipts?

A:

Q: I don't like using text etc, is there an option for me to receive a voice call?

A:

Q: If I have a smartphone, can I see all of the information you are collecting on me? Will the whole world be able to see my transaction history?

A:

Q: Will this invade me and my family's privacy?

A:

Q: How is this going to help me make more money on cacao?

A:

Q: How do things work if there isn't any cell service in the area?

A:

Q: How can I get more training information and technical expertise through this program?

A:

Q: Am I obligated to sell to the Company?

A:

Q: How will this change from my normal operations?

A:

Company staff

Q: How is this going to drive business value and how do we measure it?

A:

Q: What technology are we going to use? Will it need to be integrated into other systems?

A:

Q: This sounds expensive and complicated; how much is it going to cost and how are we going to manage it?

A:

Q: How is this going to change how we do business?

A:

Q: What do the global trends towards traceability etc, look like and why are they moving in this direction?

A:

Q: How will the QR codes be deployed? Stickers? Or will we need to manufacture new buckets, bins, etc?

A:

Q: What kind of new training will be required for our staff?

A:

Q: A lot of the region has patchy mobile signal; how will this work when there isn't a connection?

A:

Q: What kind of data is this collecting, is any of it sensitive, and if so how do we keep it secure?

A:

Q: Does the application keep track of my location when I'm not using it?

A:

Q: Will this be mandatory for all the farmers we buy from?

A:

VISUALS

Figure 1: Buyer Mobile App - Expanded Detail
Mobile App - Expanded Detail

Figure 2: Buyer

Figure 3: Buyer Mobile App – Grower History
– Expanded Detail

Figure 4: Buyer Mobile App

Figure 5: Grower Flip Phone Chat Bot

Figure 6: Operator Web Application View – Generic Representation of Active Containers

Figure 7: Example Readout per Container

Figure 8: Example Data Collection Record per Grower

Figure 9: Satellite View & Detection Notice

Figure 10: Color Coded Change Detection Status by Grower