**W3CC - Interview technical manager organic cocoa + banana farm - 5-7-2022**

**More than a question – response, this is more of a conversation. I have a guide to… exactly, to guide the conversation. We will start with a presentation who you are, in what sector you are. We could start there.**

Well, my name is [name]. I am an agricultural industries administrator by the Tolima University. I am an internal quality auditor, implementer of international quality assurance systems and I work as a technical assessor in the agricultural area, in the administrative area, with high social and environmental impact in the ongoing productive projects.

**Are you currently working on this plot, performing what specific activities?**

I work on this one, and other 8 projects that add up to 15 plots. My function is to provide technical, agronomical and administrative assistance with social and environmental impact, meaning that all the agronomical technologies on crops as a work methodology, are clean ones.

**Is that under you own name or do you belong to any…**

No, no. It is under my own name. I don’t work with… I work for my 9 bosses, who are my 9 projects. I have 9 bosses so… Mr. Oscar is one of them.

**I see. Perfect. On this train of thought, with the 9 projects you must have… Oh, firstly, are all of them in the same sector? Meaning, cocoa. Or do you have different type of crops?**

Yes. All of them are in the Quindio department, except for two of them that are in Caldas. But let’s focus here. 80, 85% are at the Quindio department, through 10 municipalities. The target crops are coffee, cocoa, banana, citrics and avocado.

**Ok, perfect. Going more specific on what Siban and Susan are studying, which are cocoa and coffee. Here you have that perspective. How do you interpret the current cocoa and coffee situation in the region?**

Well, it is my understanding that if we are talking about cocoa, the Quindio department is, in the last year, the one that has growth the most in an exponential way on technified cocoa. Meaning that here, the cocoa area has been increasing progressively. Regarding coffee, we are coming from a decrease but since last year, one year and a half, maybe 2 years, the price has motivated people to keep their coffee plots and to even make new sowings. Right now there are new sowings being made for cocoa and coffee, in the Quindio department. Both of them. They have been growing. They keep growing. If we go to cocoa, it has a huge are growth potential that in the future could be stablished as cocoa. I think that coffee, at least, stays the way it is or grows a little.

**On that same train of thoughts, with the coffee situation, to which crop has the farmers migrated the most towards?**

That depends on the zones, right? Because there are coffee farmers regions, which are the mountain range regions, and that has shifted mostly to avocado. Towards the lower regions, they have shifted to *papelillo* avocado, towards cocoa, towards citrics, towards banana too and towards plantain.

**Ok.**

Meaning, many areas that were based on coffee as a monoculture, they usually move to plantain, then to citrics, right? Lime, orange, and to cocoa, too. That’s what has the most relevance. And grassing. If they might have shifted to livestock.

**All of this… of course, is impacted by the market itself. Let’s say the market is the one that pulls, somehow the… plus the market prices, pull the shifted to other crops or to keep them. Then, which are the challenges and problems of the current system? To stay on the crops or to migrate.**

I think that the problem is not the crop. Colombia and the department have a huge potential, in terms of soil quality, to produce many things. The problem is the market. The problem is that farmers, in many cases, sow by fashion. For example, you sow curcuma. You see that it is going well. You also sow curcuma. I see that for you two it is going well. Then I go and sow curcuma. Now the market consists of three. The thing is that sometimes it is by fashion, sometimes they work wisely and before sowing I already know who I am selling it to. That’s where we have to get. The crops success is not… The production… The conditions we have here allows to cultivate many things. The problem, the flaw, is at the commercialization level. Finally, we do a big effort to produce a kilo of bananas and at the end someone else gives value to my bananas’ kilo. I don’t even assign it. Right? At the end, what I’m told from outside is if my bananas are at 800, I charge 800. Even if my production costs were at 900. I don’t have opportunity in a traditional production-commercialization market, to negotiate. But the ideal is for me to assign the value to my product. Then I won’t sell fresh banana. Instead I sell banana flour. I transform it or I associate or I certify myself or I go and look for markets. Here the problem is that a lot of people want to receive more while doing less. And it isn’t like that. I receive more if I do more. What does that lead to? Orange economy. It is marketing, to go a visit, to offer my product, take advantage of the networks. Look, let me tell you, I was in the global coffee forum in Medellin. What these broke ones are doing with the coffee commercialization to the exterior is amazing. They are outstanding, selling natural coffee somewhere in a small town in Japan. Even if it is only 50 pounds, they are doing it. Look, the thing is not that much about the production but the commercialization and the marketing work related to the production.

**There, I must somehow, with the following topic, and it is sustainability. Because it makes a lot of sense, in the sense, sorry for the redundancy, of the intermediaries being the farmers flagellum for so many years. Considering that intermediary and not taking it away, because it is somehow impossible, what are the challenges for sustainability for coffee and cocoa in the region?**

To organize. If we are talking about environmental sustainability, there are production systems that allow for that. But let’s talk on the business sustainability, right? A business, being sustainable, should be able to sustain itself for many years, right? That is what sustainability is about. Of that economical balance through time. I would think that one way is not working individually but to taker advantage of the forms of associating and of some associations and cooperatives, and of some business models supported by the commerce chamber. For that trampoline to be used in a satisfactory way, for it to be sustainable, I must be willing to negotiate on my product. If I’ll stay here, I might fail. Because, let me tell you, the banana production costs are an example, and it could be a cost of, for example 200 pesos, right? If the banana is at 400, I have rentability. Amazing. But if banana is at 100? And that is what happens. That’s the sway of the intermediary. How do I assign sustainability? I must do more in marketing work and I must knock on doors. And I think that this is the time. For a while we’ve been dealing with the topic of globalization and we see it in everything. In mobile phones, in information, in everything. In the agricultural area it is important for it to happen, too, but for every person to look for their spaces. And if that is done supported by the government, by entities, by the academy then that would be very good. But not staying at “I don’t do it. I won’t do it”, because then I won’t do anything.

**One of the largest challenges you mention is associating. Yet, there are associations that group the ones that want to associate. Do you know of any activity, training, certification, delivery of fertilizers, etc. that is given by association to incentivize that sustainability?**

Yes, yes, of course. Look, the coffee growers commitee is a private entity and somehow it groups all the federates. It does. It gives seeds, it gives fertilizers. Fedecacao does it to. Fedecacao provides help on the subject of soil analysis, they have discounts because of being a member. Fedeplacol, which groups bananas, work on the area of academy and research. At the local level there are many cooperatives. I could name one of them, from *Filandia*. It is called… I don’t remember the name but it has been successful and it has been an example on the national level. I know there are entities and governmental programs where they have delivered chickens, pigs, chicken feeding, pig feeding, and at the end they end up selling the chickens or eating them, or selling the things. The problem is often about people but also… There is something missing on this side but also on this side.

**Ok. There is a good question and it is, basically, the support exists but the ones receiving the support doesn’t always do with it what should be done?**

Yes. And they don’t use it like they should.

**I’ve heard of this word… Paternalism, many times. It becomes a paternalistic element. From that situation, that is now evident, how could the sustainability be potentialized, from your perspective? More personally. How could it be potentialized?**

The issue of paternalism is real and it is true. That paternalistic access was not done as something bad. We made it something bad. At the end, “well, what are you going to give me? What are you going to give me? What are you going to give me?” Waiting for them to give me, waiting for them to give me, waiting for them to give me. And at the end, the things that they gave me, I won’t put them to good use because it didn’t cost me anything. Right? That is, on one hand, sensibilizing the source, where food comes from, on how the new models could be. But when that people die, what is going to happen? We have to incentivize the generational turnover. For the new generations to continue with the business. Because there will be a point in which our old people, which is the majority of our farmers. The age of farmers is very high, in average. And if there is no generational turnover, what will happen then? And that in reality that is happening. I think that is what we should tackle. Look, it is very hard for a young person, seeing the example from his dad, fighting all life long, and working very hard with few things, for him to follow the same example. What is he going to do? “No, well, I want to do something different from my dad. And my dad work as a farmer. Farming is very hard. It won’t work here”. You see? Let’s look at the other side. The kid failed the year so I send him to work on the plot during the holidays. Then they see the plots as a punishment, not as an opportunity. We have to work on the new generations but together with clear policies, too, from the government, independent entities, that allow to guarantee that the production will be profitable. You tell me, a young person, earning more money juggling balls at a stop light than working under the sun and rain… The thing is the work… Let me tell you something. Farming is honorable. And when you see a farmer working, I take off my hat. Because it really is honorable. And for it to be paid badly… who wants to be there? There are many things that could be done to improve that, because Colombia has an unimaginable potential. And we are just left listening “Colombia has many bird species”. And? “Colombia has soils, Colombia has water sources”. And? And how are we making that our strength? Oh well, tourism, sure, a part of it, but what about the essential agricultural aspect? We lived that situation a while ago. Without agriculture there is no food.

**Simple. Yeah, it is true. Regarding what Siban and Susan are doing, do you have experience, do you know of, have you been told on anything related to bioenergy projects?**

To us? Personally? Look, nowadays… Bioenergy includes solar panels?

**No.**

No. It is not common, really. For it to be a process in plots. But lately I’ve been interested and I’ve been reading about biodigesters. They could be an alternative but it is a methodology, it is something not being talked about much. It actually isn’t easy to find a plot with a biodigester or that uses some byproduct to make alternative energy. It is complicate. I don’t really know much about it.

**Having that in mind, a double question. What would be the challenges developing this kind of processes? And what would be the opportunities for the farmers, the environment, and for the region?**

Are we still talking about energy?

**Yes, about bioenergy. Yes.**

Bioenergy. Well… We also keep hearing that climate change would arrive and it turns out it arrived many days ago. And it will still arrive. It will arrive. I don’t know if it has arrived already. I would think that as long as we have that technological transfer, of how to do it, starting from what, and having all of the methodologies, I think it would be fascinating and totally valid. Because, somehow, we were taught through the market, through school, that we depend on external things. But if we go to a plots level, to small system, and if that small system can produce its own energy, it would be amazing. Right? As an example. That’s not the current case but the wind works as bioenergy? The wind? It is a different alternative that is not that present here but works in other regions. I think that under the fair scenario where there is transference, that involves whoever it has to involve, and if it arrives directly to farmers… Not do alone but do together. Right? And don’t give anything for free. But do together. And if it can be executed, I think that type of technology is really valid and it would have good expectations because many by-products are lost in plots. A lot. And we don’t know they could be used as an energy source.

**That take sus to the next step. The project Siban and Susan are developing is called Biohubs. It is a win-win element between three sectors that we understand as the rural areas, where the biomass is produced as the raw materials used in the transformation and production of energy, biofuels. I’ll get there. And the intermediaries that refine it. The fuel producers. Now, the intention of this idea is, as you mention, for rural areas, in the case of this study the coffee axis, Risaralda, Caldas and Quindio; there is a lot of biomass or there is a lot of residues not being used. These residues could be collected, that biomass could be collected and in a biorefinery, through a thermochemical process, of which Siban is in charge… I will explain in a simpler way. There some sort of pressurized pot, you apply pressure and temperature. 300 ˚C and 100 bar pressure, 10 minutes, that biomass will be converted into… Oh, well, what is the biomass? Coffee peels, the honeys, the trees trimmings, and from cocoa the cobs, the lixiviates, etc. All of these residues go into this pot with pressure and temperature, and generate 4 initial elements. No, 4 elements. Water, carbon, gas, and crude. This process requires…**

Water, carbon, gas and crude? What is crude?

**I’ll get there.**

Oh…

**That’s exactly the main point of this. Pyrolysis in which you have to dry biomass to then treat it. Not here, here you leave the water in it. The water is reused in this system. The gas as an energy source and carbon, if not used for soil improvement, it can also be used for energy. And the crude, is used for a later refinement. It is refined and it is transformed into biofuels. Or other products. I’ll get there. Crude is like the fossil crude but it would be biocrude. Right? It doesn’t take millions of years like it takes the earth, but this one takes less and is bio. It comes from plant matter and it does the same. Meaning it is a homolog. So we have the residues… In the map they are even considering urban waste but that is not being used. It will only involve the organic residues to see how they work. And it would impact education, employment… Many sectors. They have a triangle, where there is economy, environment and social. The idea is to equitably impact these three areas. I’ll leave this for now, I’ll get back to it. Within this broad map, because it is a broad map, it includes too many details, what would be the challenges, the benefits and the prejudices, that is very important, of value chain like this in the cocoa and coffee sectors in this region.**

I’ll start with the prejudices. If we don’t understand, there will be many “doctors”, right?

**Ok?**

It is important to arrive with a methodology that allows for technology transfer, right? So, I mean it because of the area. Here there are many “doctors” for whom everything is a no, no, no. No. An open mind for this kind of things is complicated to achieve, right? That would be a challenge. A benefit? Totally. A total benefit. Meaning, let’s do what we were saying before, making every plot a system and attempting for that system to be sustainable through time and achieving for it to be self-sufficient. If I’m self-sufficient in energy, in food, in a series of things, then I will be successful. That would be a very important expectation. If we add this energetic factor, man, I think that everything done bio, everything done bio, to be applied in farms is valid, for me. That’s what I think. It might be different to what they think there or there. But I really think that in this conjunctural moment for the planet and for society, change should start here. Because, in reality, our planet is going to end. But it won’t just end, we will finish it. To the people who might want to compensate, this is a big opportunity.

**The million-dollar question is, would you be willing to a conform, together with your 9 bosses, a link in this new value chain?**

If it is about me, yes. I would. And there might be some projects that fit it. Others won’t, based on how I know people is. But, let’s suppose that 8 wouldn’t do it but one would. It takes just one doing it to show to the other 8 that it works. Meaning that I wouldn’t give up. I would say it could be done with some of them, yes.

**What do you think your place could be in that value chain?**

The first step would be to document myself and learn, be a transmitter. Like a neurotransmitter. Travelling from here to there, transferring information.

**If a project like this one, presents itself or is developed and you can identify your role in this value chain, what would be the benefits for you and for the sector? Well, for the sector, for you and… let’s put it this way, for your bosses? The plots where you work.**

I think the benefit is a common one. In common, the benefit is the conservation and improvement of the environment. Of our soil, of our water sources, the quality of life for ourselves. For myself and everyone, I think. The benefit is for everyone.

**Ok. Now, the question is… It is a complex question and it is, why haven’t it been developed? Why do you think a project like this hasn’t been developed yet?**

I think… This is a project that requires a lot of research, right? And I think there is a lot to be investigated yet. Many ideas that have stayed along the way. Other ones that have emerged. I think that was is missing is to be able to reach people whit this being clear. The first thing is to implement these technologies and for them to be believable and applicable. I think the first thing is to design a package that can really reach people and before anything else, is capable to sensitize people. Because we can know what do they think but we don’t know what do they feel regarding climate change. I think that all of this goes together with the improvement of the environment and our planet.

**What would threaten or what would be a… what would be the punctual challenges for a project like this? For the existence of a project like this? At the regional level, at the…**

The first thing is, people, for sure. People find the wall in people themselves. And that is normal when they don’t understand something. Right? They create a barrier. But I think that… I think that it is also a will from the people that is involved in that transfer. And with the research field. Because, usually, that is done with research. There is a sample, they validate it and then apply it. I think that it could be done… let’s say, to not have clear who will develop the thing but also for the other parts to put their grain of sand for it to be developed. It is a consciousness issue, at any level. I, who deliver the technology, I, who receive it, and I, who apply it. Right? I think that the grain of sand should be put by everyone and I think that the issue is people. Yeah, one represents an entity, another one cooperatives or associations, the issue is still people, individuals, and consciousness. Because let’s not lie. This has an environmental focus, doesn’t it? It has an environmental focus and it has a high environmental impact. So I think it is a lot something about consciousness.

**I think you have directed the conversation very nicely. Here I have two grids. One for cocoa and one for coffee. Let’s say they the positions are homologated for coffee and cocoa. Yet, they are relating power vs interest on the ones that Siban and Susan identify as the actors that play a role in the cocoa chain and the coffee chain, having governments, having transport, here… well, etc., here are the ones that they took into account. In this question or in this part, taking what is in it into account, what actor is missing in that grid? Which ones are missing and why?**

Let me see, I’m missing my glasses. The first thing is that I’m missing my glasses. What might be missing? I imagine that commercializ… are they the same thing?

**Yes, but one for coffee and one for cocoa.**

It says, national government, regional government, municipalities, maritime industry, technology provider, biorefineries, Fedecafé, cooperatives, maritime industry, communication platforms, cenicafé, coffee growers, academy, transport, storage, biomass collectors... I imagine that the national government would be involved in commercialization.

**As a promoting actor?**

Or it would be what competes each one. Or it will be them alone, regarding commercialization matters. Or it would only be for biomass production? I mean, the…

**Regarding the sector. Cocoa and coffee. Everything comes from here.**

Yeah, exactly.

**Coffee production and also the…**

The by-products

**Biomass.**

Oh, ok. What would be missing?

**What actors would be missing? Who is still supposed to be put in there?**

The research area is with Cenicacao and Cenicafé. Coffee growers, are there. The municipal governments, the national governments. Maybe the departmental governments. Or what?

**They would be in the municipal government.**

Oh, here they are. Municipalities, region, country… Providers. The consumer?

**It is missing the consumer?**

Yes. Although I see it very poorly without glasses. I don’t see it.

**Yeah, it is not there. There isn’t a consumer as such.**

I think that it is missing, the consumer.

**Ok. Why is it missing? Why does the consumer have weight and value in this grid?**

Because he is the one paying. Because he is the one paying for the product. If we are talking about this coming from here…

**Yes.**

Yes. And if his plot is not here, your is, then don’t tell me this will be worth the same as this. To begin with, this already has an added value because it makes use of bioenergy. And that already has an environmental impact. That way I won’t spend energy from the one transported by cables but I am doing itself, right? But that doesn’t mean that they are going to provide energy. No. The tomato I am producing with bioenergy production is a tomato way more environmentally friendly. So the consumer is missing. Because at the end, he is the one that will pay. This is a process but it will generate a product. He is the one that will pay. I would do it, just as the chicken that cackles whenever it lays an egg, I would cackle that my tomato is produced with a methodology… And in that plot that produces this tomato, energy… bioenergy is used. That’s what I think.

**Ok. Regarding the power versus interest relationships in the sector, do you think that the positions are ok?**

Are we considering a pyramid perspective or what?

**No.**

Or hierarchical or what?

**An actual one, meaning, this being a 0 point, I’ll show you with this example, the government in the coffee sector has high power but low interest. In this scale. In that same train of thought, are these properly located? Or who would you give more power or more interest? Or less power or less interest?**

One question. The… Are there any particular companies here?

**No.**

Private ones?

**Well, as a private company, it would be the refineries.**

I see.

**They are here, the biorefineries or the transport.**

Here I have a dilemma and it is as follows. I think that agricultural policies are still in the hands of the national government. Right? So I would give them the power but indeed, little interest. But then, I would give them high power but also high interest.

**So you move the national government towards…**

Yes.

**Towards high interest.**

Exactly. For it to have high interest because in occasions, it has been seen that we go together until certain point and then we leave them alone without assuring the sustainability of a given program. And we made it until here and bye, bye. But from here on they don’t know if it is sustainable through time. So I would think that… and I don’t mean to guide them all the way to the toilet and take out the pee for them… No. But to at least, and the government is lacking on this, show this part and the final part, the final product. And that is where the problem is. There is not a price regulation of products in the agricultural sector. Right? So I think that at the end, there will be a product and the government should have more interest. And I think that the program, through the… liquid transport…

**This transport would be…**

Ok. This one, too?

**This one here.**

It has a lot of interest.

**And the biomass collectors would be this one and this transport.**

But they should have some participation in power, too, at the… and it could be a combination for commercialization. I think. I think that this entity, this proposal of yours, should have more power, aside of the interest. Or a joint work with both. Because I think that at the national level, the government has made alliances between private and public sector, right? The farmers, right? Of course, they have a lot of interest but the power would be reflected on the electing of the national government, right? Or something like that. Or by that fact that the representators and the agencies haver certain decision-making power on policies. How? I don’t know, but I think of that. I would make these three observations.

**The rest are all ok, regarding the position.**

I would say that the maritime industry must have interest because at the end this goes towards them. They could have power but no interest? No. Let’s not lie. They are interested. This is for them. So they should have more interest in this location.

**Fedecacao, Fedecafé, cenicafé and… Are they properly located?**

No. They should be here and here, too. Because they are the research area.

**So, giving them more power?**

Yes. You know perfectly that in Colombia we are missing that. Money for research. I know both entities. And they do as much as they can with what they have. They have done an amazing work. And if they had more, they would do much more. So I think that these research entities should be supported way more. They should have power.

**With which of these actors have you related with and how has these relationships been? Given your projects, your nine projects, and previous experience.**

I… With my professional activities, I’ve been around more than 22 years and I’ve been through coffee growers’ federations, commercial enterprises, as an independent, just like now. I could tell you that… Because, let’s say that I’ve been in the private, in the national, too. I haven’t been in research. I’ve done research but very punctually, almost personal ones. Some help, some help.

**From the producers’ perspective. From here, how are the relationships with the rest of the actors?**

From this perspective?

**Let’s say that, somehow, you are in this position right now. How are the relationships with the other authors? And, most importantly, with who do you relate?**

The government relationship, let’s call it like that, I think that with the small ones, they have tried to support. I think it is fine. At the larger level, I think more is missing. Because there are large, medium and small producers. I think that it is missing between this and this. Between this one and private ones. And between this and this.

**So, there is a disconnection between producers and national government?**

No totally, but it is missing. The more I investigate the more I can pass on.

**Ok. How is the relationship? Because, if somehow, producers are away from government, private companies, and research… I’m not saying it is 0 but how is the link between producers with their respective federations and associations?**

Often, people might have the crops but they can’t be part of the federation. Or they don’t necessarily require to be part of that association, right? I think that it is missing that connection. Of many with governments and private ones. Let’s see, if we are talking about the commercial field, the private sector is more attentive of the large ones who are the ones that generate larger purchasing volumes. Right? If we go towards the smaller ones, the national government is the one supplying what they can in projects, in execution, to the small ones. But it is missing. There is a large portion of the national territory where agriculture is very hard because of the ways, of the utilities, of the means, and the communication. Right? So I would say that it might be a relationship in which government hasn’t done much throughout history. It has done too much. It has done a lot. But I think there is missing. And there is missing towards not the large ones but towards the small one and the medium ones. Towards the large ones it is missing on the field of commercialization. Thinking big and outwards. About exporting. That’s what I think.

**(To Siban) Do you have any specific questions, Siban?**

**(Siban to interviewer) Yeah, maybe. Right now they are practicing the ecofriendly farming, right? Because of, they learned somewhere, on an institution, these kinds of things. If they want other farmers to practice the same, what does he think is the major challenge and what would make others to also practice it. Because he knows what are the benefits of this. So, how could this be effectively be communicated to others?**

**That’s a very good question. You have as an experience, that this organic process works and somehow you are applying it in another 9 projects. Small and medium scale. And large scale, to me this seems like large. What is needed or, more like, how would you add more farmers for it to be sustainable?**

This is the example. Showing, bringing, inviting, teaching and sharing what we do here. That’s how they can witness. And starting from these visits they start to emerge. “I want to do it. I want to do it. I want to do it”. So let’s say this is the starting point. But I’ve also put it to practice for a long time in my professional life. Let’s say that time proves you right. Starting from this example, and given my way of working… The thing is… The thing is that it is not that hard for you to teach on style of agriculture. It makes no sense to produce one orange with a lot of agrochemicals while I destroyed water, soil and pollinators. Does that make sense? That makes no sense. It makes sense to produce the orange and to improve the water, and to improve the soil, and to improve the environment. That makes sense. And it is not too hard to understand. If I go on, teaching them on technical matters with blah, blah, blah, they will not understand or simply won’t care. You have to make it practical. You have to be pragmatic in order for you to be able to explain it. This isn’t something new. This is something our grandparents taught us. The thing is, 95% of the crops, of the food you eat, 95% of the medicines you take, 95% of the medicines for cats and dogs, come from the soil. How unreal it is for me to produce by destroying the soil. To me, it doesn’t… Well, I end up with a question mark. You don’t need much studies to understand this. So, firstly, is the way to approach and that is by technology transfer. Secondly, which is already there and is something they are giving, come here, I’ll show you. It works here because as you have seen we have an office with strict data registration, with traceability and safety. (Phone rings) I’m sorry. Therefore, part of the experience is to be able with the authorities, in a sense that it is possible, and secondly, to be able to take something to show to people so they see that what I told them is real.

**(Siban) One more question, what does he think about the use of residues in this way instead of what he is going to propose? Because he is going to build a compost, right? So, how does he compare these two? Because these two are different ways of utilizing residues.**

**It is a very direct question and it is what do you think of using the residues, in this case of cocoa, well, yeah, cocoa and what you showed us back there, to use the residues this way? Because they are different paths to use the residues. There is the compost you do with all of this organic issue and to use them for biofuels.**

I think it is positive and if I would get to know it deeply, we could apply them. Why? Let’s say that the compost, which would be the product from the cocoa peels and placenta, and it would be too, in the case of coffee, from the coffee peels. The lixiviate, both from cocoa and coffee, can be used. The mucilage, right? Foods, to reincorporate into compost. Let’s say that is the line and not everyone does it. Everyone ditches what could be useful. Our knowledge, so far, goes to using the lixiviate, the mucilage, for vinegar, for wine, for rubber and the peels to make compost. Recently, we gave some cobs to the Quindio university to do tests on fiber extraction from cocoa peels. That is as far as I know on by products utilization. Right? If I had the chance to know this process, we would likely do it. So, let’s say that I don’t know it but everything related to use something that would be lost, of course. Of course I would.

**Good. To conclude the interview, the talk, this is basically a mental map of what is intended. Here we have coffee pulp, coffee grounds, the peels, the foliage…**

The branches.

**Yes, the branches. Everything that is left after the trimming. The coffee skins. I mean, the cocoa’s skin. Even the coffee skin.**

**(Siban) There can be also other residues left from bananas.**

**Ok. In what they have developed so far for this process, there even can be other sources, which are banana residues. In banana you cut the bunch…**

Does it also work for …

**Yes, of course.**

**(Siban) Yeah, we can use it.**

**You cut the bunch and the rest of the plant is a residue. You don’t do absolutely anything else. It is banana residue. You even use other organic residues. They would go to a biorefinery. This is an example of the carbon, the biochar that could be used for soil improvement and even for energy, and this is the crude that you were asking about earlier. I didn’t talk much about it because here I am going to give a broader explanation. I said that the water and gas would be reused in this process.**

This is called biochar?

**Yes. And the end of the crude is in the maritime industry as biofuels, in the air industry as biofuels, but additionally, just as the fossil crude, it works to do biopolymers, in this case bioplastics, and it works for adhesives.**

Woodwork, cosmetics, fertilizers, paint, tires… Clothes? Tents?

**Textiles.**

Textiles and plastics.

**So it is what could be done with this crude, it is very broad. As such, the fossil crude would be substituted by the biocrude. That is the intention behind the utilization of these residues. Any question? Do you have any question either for Siban…**

No. It became clear to me with this thing.

**It was easier to explain it like this. That is why I didn’t explain earlier.**

No worries. But yeah, of course. I agree. And if there are more initiatives, independently if it is with cocoa or coffee. Let’s say you could do something with orange peels, with the banana peels, I mean, with whatever you could imagine could be wasted and could be converted in something useful in pro of the environment, I agree, I like it, I love it and I agree with the thing. Totally. I am friend of these methodologies. Yeah.

**To conclude, the 28th of July, we will do a summary, a… summary on everything that has been done. They will present the project, broadly, we will do a workshop with producers, associations, governments, all the involved sectors, and you are invited. I think that Diana, when we have sent the invitation, the images and the flyers, will get you involved for you to go and participate in this activity, which would be good for the different actors, for it to not only remain on paper. For it to be closed and the unintelligible to get something, for the farmers to remain with their needs, for the government… Well, etc. It is going to be a beautiful work that will be done and so you are invited and to finish, thank you so much for your time, for your answers, for your availability in this interview.**

As far as possible one can add his sand grains for everything to be better. We will be there.

**Thank you so much. Ready. That would be it.**

**(Siban) That’s it? Thanks a lot.**