**F4CF - Interview farmer #4, male, Chinchina, 54 - 24-6-2022**

**Specialties/difficulties:**

* **Contratos de ventas de café a futuro: could not really translate this term, I used “future coffee sales” or “future sales contract”, for example.**

**You can first introduce yourself.**

I´m [name], I am a veterinarian, and I am a 3rd generation coffee grower: my grandfather had coffee farms, my dad had a coffee farm, I have a coffee farm. I am a professor on Agricultural Projects at UTP. I was born and raised in the coffee axis.

**What is your age?**

I am 52 years old

**How many hectares do you have with coffee?**

I have a farm together with my sisters, it´s 20 hectares. I manage some farms from my mom and her sisters, my aunts, and that´s 100 hectares.

**You´ve said you are 3rd generation. So those hectares are from your family only?**

Yes.

**What types of crops do you have?**

We have coffee together with banana. Colombia variety coffee, most of the farms we use what I call Cenicafe technology; we use coffee with low unintelligible, resistant to blight, the varieties that the Fedecafe has developed such as Castillo, Colombia, now we have one called Cenicafe. Mainly that´s how we are, intercropping with banana . In the farm me and my sisters have some plots of special coffees where we have exotic varieties; we have unintelligible, moka, java, or unintelligible, which is a naturally decaffeinated coffee.

**How did you learn about coffee?**

Because my grandfather was a coffee grower, I grew in that environment. When I went to university, I went to veterinary school but when I finished my degree, my grandfather died that year and since I was the one who was the most related to the field within the family, I ended up managing the family farms. I have taken courses of coffee management, us coffee growers receive advice from Fedecafe, I already have been 30 years on this ride of managing coffee farms.

**With how many people do you work here?**

Workforce is variable because it depends in the time of the year, in these farms that I´m telling you about we have 15 workers permanently distributed among them.

But during the harvest season, we can have around 200 workers.

**Which waste do you generate?**

From the crop itself it would be the coffee pulp basically. Not that much, but also waste of the coffee supplies and whatever is generated due to the workers, like with the attention to their sanitary services. In the farms we have septic tanks that supposedly manage wastewater, but that´s it. In the farms we are more or less organized and the waste, from the packages from the supplies, containers of insecticides and herbicides are stored and then given in the deposit warehouses. They receive them to dispose of them appropriately, so we do that. We have septic tanks and we have pits to collect the pulp. We are relatively respectful with the environment.

Right now, it is not valid, but we have had the UTZ certification which involves that we are respectful with the environment, like we don´t use specific prohibited agrochemicals, we dispose the agrochemical packaging appropriately and we manage the water; we try to use a low amount of water for the pulping. With the special coffee we do not do the pulping, they are dried with the peel, so no water is consumed, those are called “naturally processed” coffee. In the others, very low amount of water is used, and we try to recirculate as much as we can. We have pits to store the pulp to avoid depositing in the river.

**What do you do with the pulp?**

In one of the farms, we have some earthworms, so we transform it into hummus which is used in the seedbed for planting new coffee. Or it is put in the coffee plantations as fertilizer when the drying process is made.

**Why do you do it like that?**

First, because it is a necessary environmental need that we must have to access to these certifications because in our farms we have an environmental conscience, we try to be as respectful as possible, without saying we are the best in the world, but trying to do it in such a way that is adequate for the environment. I have university education that allows me to know the importance of preserving the environment, so in fact, we are trying to increase biodiversity. In the coffee area, a lot of years ago, we lost biodiversity. In the water currents there were a lot of fish, unintelligible but no more because pulp contaminates a lot. unintelligible, since I have my processing plants adapted, I no longer receive people but the environmental authority, the autonomous regional corporations, in the case of Risaralda that´s CARDER, some time ago they charged a fee if we didn´t have appropriate coffee wastewater treatment. That forced a lot of people to modify their processing plants to be able to use them better. When I was a child, coffee was pulped, and the pulp was thrown in the river and that contaminated a lot.

There has been an environmental fee, right now I don´t know if they are charging it, they never visited me again because I can demonstrate that we do a proper management of water, but we did have to adapt, and a lot of farms in the area did it.

**Where are your farms?**

At Santa Rosa de Cabal and at Chinchiná, one is at Risaralda and the other one is at Caldas but both are departments from the coffee axis.

**How much time a week do you work in the field?**

I work in the field and the university, this morning for example I was at the farm. On the weekends, tomorrow, I go to Santa Rosa to pay the workers. I have a manager who is permanently at the farms.

**Do you also belong to an association or cooperative?**

I am coffee grower with an official coffee grower ID from Fedecafe. Fedecafe is an NGO with democratically elected representatives, so I have my ID.

**What does that mean?**

It means that I am registered at Fedecafe as a coffee grower, that I can vote to elect or be elected as a member that represents the coffee growers, the ones that make Fedecafe´s decisions. In a month I think we´ll have a vote for the coffee growers representatives. Fedecafe is an organization financed with money from the coffee growers: per pound of exported coffee, we need to pay a fee that I think right now is of 6 cents of a dollar. With that we pay the functioning of Fedecafe, so they give technical assistance, they help in some negotiation processes with foreigners, they are in charge of Cenicafe, Centro Internacional de Investigaciones en Café, which is at Chinchiná, do you know it?

**Yes, but we are still going to talk with them as well.**

That one is at Chinchiná, we have a farm nearby from there. I am registered coffee grower at Fedecafe. Not all coffee growers are registered, but most of them are.

**So, you sell the coffee that you produce to Fedecafe?**

I can sell coffee to the coffee grower cooperatives, which are organizations. I imagine that you know what is a cooperative, more than us. They buy coffee from us, but I could also - and I do it – sell to private coffee buyers that export the coffee privately. Or I can export coffee in low volumes if I produce coffee like the ones I was telling you about that are special, like unintelligible. With my ID I can export up until 50 kg by plane, of roasted coffee or green coffee.

**Directly to a client?**

Directly to a client in Europe or the US that is interested in having… for special coffee stores, they look a lot for differentiated coffee for which they can do traceability about its origin. So, we can export at low volumes.

**Why are you associated with Fedecafe? What benefits do you get?**

Because I can vote, I can participate in the decisions from the coffee growers association, because we get a lot of help with technical assistance, because I think that Fedecafe helps. Also, as in every country, there are people who do not like it. In Colombia there is a very particular situation because Fedecafe exports coffee but there are also private exporters, so there´s some competition and Fedecafe, by law, are the ones who say which type of coffee can be exported, so the private ones, for example, are upset with Fedecafe because they say that it is a competitor and how can as a competitor they are the ones deciding what can be exported? unintelligible. When we began with this wave of special coffees – coffee´s 3rd wave – there are coffees with very exotic flavors, and sometimes there were problems because at the time of exporting, Fedecafe´s technician – who is the one that decides if the coffee can be exported – said that the flavor was not a normal flavor for Colombian coffee, so he didn´t approve the export. There were some discussions but now it´s being managed, the person who buys it in Europe or the US sends a letter saying that “I know that this coffee doesn´t taste the way you like it, but I like it´s taste, I want it” and then it can be exported. So, there we are making progress.

**It is not like if you are associated with Fedecafe, you can only sell to the Federation?**

No, no, no. I can sell to anyone.

**Which do you think are the main challenges in the sector?**

I think our biggest challenge right now is getting the workforce, getting workers. It is very hard for the kind of coffee growing that I manage. In Colombia, 95% of coffee growers are small ones, they have less than 5 hectares of coffee. A lot of them are farmers that live on the farm, and their family is the one working on the field.

The ones of us that are not like that, or that have bigger farms, I could consider myself in Colombian terms as a big coffee grower, which would be ridiculous to a Brazilian, because they have extremely large farms. But for Colombian standards I am a big coffee grower, we have workers, field managers and we must hire the workforce, and nowadays it is complicated to get the workforce for the farms because work in the field is hard, there´s no internet, so they cannot log in to Facebook. Precisely this week I must visit someone because I want to provide internet access at the farms to attract more workers, to have more amenities for them.

**So, you have workers from outside? From other regions?**

Yes, they come by seasons, during the harvesting time people from other regions travel here. This is the coffee axis, but it is no longer the one that produces the most coffee, the area that produces the more coffee is Huila and Cauca, that´s the new coffee axis. But they do their harvesting at a different season than we do. So, there are people who work on that and travel to where there is a harvest. That´s more or less how we do it.

And with the situation of Venezuela, that has made a lot of people to leave the country, a lot of migrants, a lot of Venezuelans come here to work at the farms, but it´s not the same. It´s not that easy, they don´t know a lot, the cause damage in the farm because they do not know how to harvest, “no les rinde”, they are not the ideal but oh well, there we are, learning.

**What kind of contracts do you have with them?**

In our case, the aggregates - that´s how we call the farm managers – are with an indefinite contract, with their social benefits; they get social security and familiar as well. The other workers, the ones that come on certain days to do some work are paid a destajo, al contrato. For example, today we are having a regular harvest, per kilo of coffee that they collect in cherry on the plot I pay them 1000 pesos. So at the end of the day, they bring the coffee that they collected, it is weighed and that´s what is paid.

**It is paid by volume?**

By the volume they collect. If there´s some weeding to be done or fertilization, we can hire per plot, so a plot has a specific cost and when they do it, I pay them or they can be paid by a day´s work, 50,000 pesos daily, like 12-13 dollars per day.

**So, it varies depending on the kind of work?**

Yes, if he goes and works 3 days, I pay 3 days.

The one who lives in the farm receives a minimum wage, they have the benefits mandated by law; like vacations, social security and they have free housing, because they live in a house with all services included. That´s in the case of those of us who have a coffee farm and do not live on it.

**For the smaller coffee growers, it might be harder to…**

They live there, yes. The ones who do the weeding is the son that didn´t do the homework so they punish him and send him to do it.

**So, finding workforce is a challenge.**

Yes

**Do you see any other challenges?**

Well, I do not know until when it will be conjunctural, but as a grower right now I´m worried about a lot of things: the prices of fertilizer, war in Ukraine has made that a package of urea worth 70,000 pesos a year ago now costs 280,000 pesos. Supplies are very expensive. Right now, we have coffee at a very good price, but that won´t last long, it will go down again, because it was due to a decrease on Brazil´s crops because they had some problems with the weather so their production – which is the biggest in the world – decreased a lot and that made coffee international prices to go up, that has helped us. But this year Brazil´s climate conditions are good, so probably next year we won´t have those prices. I don´t know what will happen when prices go down and fertilizers are still expensive.

**What kind of fertilizer do you use?**

I used compound fertilizers, chemical fertilizers. Chemical compounds such as 17-6-18-2, I don´t know if you are an agronomist. Do you know what that means?

**Yes, that is has different compounds.**

Yes, nitrogen, phosphorus yes. That´s the most used one. And urea.

**And how many times a year do you do it?**

I fertilize 3 times a year.

**Do you also see challenges regarding sustainability or the environment?**

I don´t know how to answer. I´m sure that yes, talking about global warming, surely, we´ll have challenges. I try that our farms are environmentally friendly. Where we are located, we haven´t had any negative effects because of the weather. Excepting, something that has happened for a long time now – 30 years ago, when we were not talking about global warming – occasionally, we get a hailstorm and that can damage the crops, but that has happened since forever and will happen every 3-4 years, but I don´t know if they´ll be more frequent will climate change.

But in these zones that we are located, I don´t feel a great challenge, maybe because I do not want to worry that much. Near to this area, a lot of farms that grew coffee are now growing avocado, and there´s some concern because of that, because it is a monoculture with a high use of chemical supplies, much more than the ones for coffee. It is easier to grow in the sense that it does not need that much of a workforce – and getting workforce is a problem to coffee growers – so some may think “I better grow avocado because then I won´t have that much trouble finding workers”. That could be an environmental problem.

Coffee has been a long time in this area, and I see, that compared to 20 years ago today there´s more care to the environment and we are decontaminating the water a lot with the use of the appropriate processing plants, I see more biodiversity; every day we see more wildlife like foxes, “coatines”. There are more birds, I see more birds and there´s been a promotion of the bird-watching tourism. Surely there is an environmental challenge, if something very bad happens it can affect everyone because we live in the same planet.

There´s been word that due to global warming, it is possible that the lowest zones regarding their coffee altitude will disappear and that we will have to move to higher areas. However, the farms that I have are all at 1600-1700 so we still have a margin. In fact, our coffee is, I think, of very good quality because it is from a greater height.

**You have said that you have UTZ certifications, do you still…?**

We have not renewed yet because we did that with Fedecafe, but at some point it stopped being that important because before they paid an extra premium to the ones who were certificated, and they stopped paying it at some point so we did not renew, but we keep using the same practices: we take care of water, we do not use prohibited herbicides or insecticides, we are respectful with the environment. We are not organic, but we are environmentally friendly.

**Why not organic?**

Because I think it is very hard to achieve in the zone we are at. It is hard to get organic coffee, and it it is very valued. Here in Risaralda, there are organic coffee producers at Quinchía but those are isolated areas, if you have the chance to visit the coffee growing zone… until when you will be here?

**Until July 31st.**

You have time. If you want one day we can go there and I can show you, we can go through our farms and you´ll see that our farms are surrounded by coffee farms. We are in the coffee area, so there, with those amounts of coffee it is difficult to be organic because plagues have a lot of where to feed from. For example, if I´m organic, surely the plague from my neighbors will realize that it is better to go eat at my farm because the food is better there, so I would be very affected. I believe that to have a farm that is truly organic, one must be very far away from the coffee growing zone. That´s one reason.

The other one is that if you go organic, your production decrease to 30-40%. The first thing to do to be organic is to not use synthetic chemical fertilizers, so you can only use natural fertilizers. It’s very high to achieve the same levels of production with non-chemical fertilizers. That can only be compensated if there´s more money in the price for the organic ones. Sometimes it is paid, the market has been growing. In fact I have a farm from my father that is abandoned, it is in a zone that is very far away from the coffee growing zone, and I have been talking with my sisters about the possibility of start growing there exotic varieties organically, because that one is more far away and is 2000 meters above sea level, way higher, there´s less pressure for the plagues, so in there an organic coffee could work. But in the coffee growing zone I think it’s very utopic, sounds nice “So cool! It´s organic!” But you produce very little so one ends up dying organically poor.

**I would like to show you the concept we are working with, it´s called BioHub, it´s like a cluster of biomass companies. The idea is that in this green area there are communities that produce biomass. We are looking specifically for agricultural waste, forest waste or from invasive species, so biomass that is not being used or that even create problems. That biomass can be taken to a biorefinery where it can be converted in different products such as biofuel where it can be used in the maritime sector. That process can also produce biocarbon, which can be used as a fertilizer, or to purify water. What we want to understand is if it’s possible to develop a system like this in the area and how can we do it in such a way that is also beneficial to those people. I would like to know if you see any benefits that this could generate for you as a producer?**

If I´m going to have additional income and I am not going to contaminate, I see only benefits. But, in pig farming, the pigs’ manure is used to feed biodigester that produce methane gas, which is used for cooking, for heat, in here we do not use heat, they may use heat maybe for the chicken. But the methane can be used for cooking. I don’t know if methane can be generated efficiently from the coffee pulp or that kind of waste, I don´t know how useful those kinds of waste are. Charcoal maybe we can… in the coffee plots that are rejuvenated, there a lot of firewood is produced, which normally is processed to make charcoal. We sell that to people that make carbon, some buy it to make furniture but there is still some waste.

At this time in one of the farms I have planted maize, mixed with coffee and for example that maize will generate a lot of waste because I take the pods but the rest remains, which I also consider as biomass for the soil because it stays and rots there. Someone offered to buy a bit from me, he wanted a bit to feed horses, but there will be a lot of maize waste. These days I´ll have a lot, in case you need to run some tests. What else we have?

**You´ve said that you also have banana?**

Banana, yes.

**And it also generates waste?**

Very little. Banana plants produce leaves, around 30 leaves, it is very little. I mean, there is waste, like from banana stem. I produce banana, we can check their waste or make some research about their composition to see if it´s useful.

**Would you be interested in collecting and selling you waste, for example the pulp?**

Of course!

**Under which conditions? What would you need?**

For someone to tell me where to deliver it and how much will they pay me. That´s it. I´ll see if it works for me to take it from the farm or you pick it up from the farm, like what will you do? If you are buying pulp, I´ll sell you pulp.

**How do you do it now with coffee? Do you transport it now to Fedecafe?**

Coffee? Yes, well in the farm we collect it, we pulp it, and we dry it. Once its dry I sell it to the cooperative or to the private buyer and that´s it.

**Do you transport that coffee?**

Yes, I do it in my car.

**Would it be possible for you to transport the pulp in the same way?**

Yes, of course.

**Do you see any challenges to develop a new value chain? What would be the challenges we could have?**

I think the challenges are more technical, talking about that it should be efficient to generate energy from the pulp, that it can be used. Because for the rest, at least in my case, it must be said first that the coffee growing business is very broad in Colombia, but in my farms, it is easy to get by car, there are services like water and energy in all of them, so I do not have a problem on collecting the pulp and delivering It to a plant, I don´t see a problem. You only need to tell me how much you will pay per kilo and I´ll make my numbers on how much will it cost me to deliver it, and if the profit is enough to pay for transport, I´ll take it, If not I won´t, I will leave it at the farm. I don´t see too much problem, not to the selling of waste. What problem could there be?

Do you want to buy the maize waste? I´ll sell it to you, just tell me how much you are paying and I´ll see if that´ll cover the collecting, transport, unloading it; if it is a good business, I´ll sell it because it would be one more problem off me and I would receive money. I don´t see any problem.

**A new value chain could interrupt or damage an existing system?**

I don’t think so, I don´t see how. The thing is that I do nothing with the pulp, I treat it to avoid contamination and I use it to avoid contamination, but it is not like I need it. I do not use it for something that I would say, “The pulp is the new gold, is the new unintelligible”. It´s an “encarte”, what I do is try to manage it the best way possible to get rid of it. But right now, I have nothing productive made from the pulp or with the banana stem or with the waste from maize, I do nothing with them. I try to manage it the best way possible to contaminate as little as possible. But it won´t be like I´m abandoning a productive system from the farm because I´m selling the pulp. I don´t even know anyone who uses it.

**We want to understand a bit more of the sector and the stakeholders that could play a role and that could also play a role in a new value chain. So we have this matrix with different stakeholders on the coffee sector and their position regarding power, high or low, and the interest they could have in a new project, high or low. And we have put these stakeholders in different positions. We would like to ask you what do you think about the stakeholders and their positions? Does it look okay? Are there stakeholders we could change?**

I think that in the quadrant of high interest and low power, are us the coffee growers with high interest and low power, academia worse, and Cenicafe as well doesn´t have that much power. I don´t know why you separate Cenicafe from Fedecafe.

**Is it the same organization?**

For me, yes. Cenicafe is Centro Nacional de Investigaciones en Café, it is part of Fedecafe, so I don´t know why they are separated. For me where Fedecafe has power, Cenicafe will also have. I do not know about biorefineries, I don´t know if there are, do you know biorefineries?

**There´s none (someone else)**

There´s none, I do not know biorefineries, that´s I do not know if the coffee pulp could be useful to them or the wood.

**No, right now we are doing some tests with that to see if it is possible.**

Exactly, but no, I do not know. Technology suppliers, yes, they should be interested. Their power, I don´t know.

**Cooperatives?**

Cooperatives for me, personally, are linked with Fedecafe but with a bit less power, I would put them lower on power. Cooperatives, most of them, have serious economic problems nowadays, because with the increase in price right now that is very good… a lot of us coffee growers made contracts of future coffee sales . For example, one arroba of coffee, which is how we sell it, if you go sell it to the cooperative you´ll get 240,000 pesos, per arroba which is 12.5 kilos. I delivered today coffee, that I had futured-sold at 110,000 pesos per arroba, because I promised to sell it at that price. But I think that it´s only me and maybe other 3-4 in the world that are giving coffee at that price. Because the rest of the people that promised the same… since I am not obligated to sell to the cooperative, I could sell to someone else, but the farmers that get a small amount of coffee are like “How will I sell it at 110, if here I get paid 240?”. That´s why cooperatives right now are in serious economic trouble, because they are not getting the coffee that the coffee growers promised. I

**If you are a member or partner of a cooperative, you are obligated to sell coffee to them?**

The obligation is only on paper. Because if I am a farmer and I tell the cooperative “I will not give you coffee”, what will they do?

**Why does the cooperative not pay more?**

If I don´t have a commitment with the cooperative and I go sell them coffee, they will pay 240, but what happens is: when I have a future sales contract, it is a way of financial protection, I promise that in 6 months I will sell you coffee at 110,000 pesos. The coffee that I delivered today at 110,000 pesos I promised it 1 year ago. One year ago, coffee was priced at 90,000 pesos. And there was an opportunity to do business where they told me “If you sell me coffee in a year, I will pay 110,000” and I signed a contract that I will sell it to you at 110,000, but I didn´t know that it would increase to 240. It is very painful, I understand, to deliver coffee at 110,000 if I could sell it for 240.

When the cooperative made the contract with me, they surely also made a contract with Starbucks or Nestle, they also probably said “In a year I´ll sell you coffee at this price”, so they made some business. The cooperative in this moment has some trouble because they cannot fail Starbucks or Nestle because they would get into a serious legal problem. But a to farmer who will come and say, “You are going to jail, what do we do with you?” and the farmer will say, “No, I do not have coffee” or “I do not want to sell it”. Who will put him in jail or what do we do with him if he´s a poor farmer that promised 1 year ago to sell it at 110 but today it is at 240, so he no longer wants to sell. That´s why the cooperatives have a lot of trouble, because cooperatives must go out there to look for coffee to deliver to Starbucks or Nestle at any price. So, they go buy at 240 but to other people.

I could go sell to a cooperative at 240. This morning I could have asked for 240, and most likely the employee would have not realized and would have paid that, but I said, “It is from this contract that we signed a year ago, that I said 110”.

**Is that very common? To do a future sale contract?**

No, it is not very common, but last year the commitments increased because coffee was very cheap, and people saw it as an alternative to secure their profits for this year. The market, since no one knows how it going to behave, got like this because of the thing in Brazil or whatever, so it is very expensive. It is very hard to sell coffee at 110 if it´s at 240 and more for a poor person. Another thing is for someone who has a bit more of a basic financial security, that has food secured, it will still be horrible, but I am not losing money or not eating. I do it, but I cannot criticize a farmer that lives in the farm and is poor if they don´t want to sell at 110 when it´s at 240. It is a mental thing, human.

**In a new value chain, if you could sell the pulp, would you prefer long-term contracts or maybe being a bit more flexible?**

I would prefer long-term, as I sold coffee at the long term for the future, but there´s a certain structure that allows me to take that decision and respect it, but I do not know I will be complied with and I also do not know how expensive the pulp will be, maybe it will be more expensive, like it´s the new petroleum, but I do not know. But I could make long-term contracts if there are good prices, I do not see any problem.

**But maybe for a small farmer that would be different.**

The problem with the small farmers is that one: how will you force them to comply with a contract? I do not know, maybe do it through cooperatives, it depends how the cooperatives end up.

**What do you think about the role cooperatives could play in a new value chain?**

I think they can help, I see more power in Fedecafe because they are the ones more in contact with the coffee growers, the do the extension, the technician that visit the farms and give advice to farmers who cannot pay technical assistance, that´s the Federation, they give advice, give them knowledge, updates them in things about production: the Federation has a higher impact than the cooperatives. They could help somehow but I do not with them with as much power as Fedecafe.

**Cooperatives do not offer the service of technical assistance?**

No, cooperatives offer some credit programs, medical help, dental health, eye health. They have some supply warehouses where they give credits and help the members on those aspects. But they do not give technical assistance. That is done by Fedecafe. And Fedecafe has the extension service, which has permanent contact with the coffee growers. Have you visited the coffee growers committee?

**No, not yet, but we will go there.**

Who will you visit there?

**I do not know, Diana knows.**

If you need someone you can tell me, and I can contact you with someone there. But yes, the federation has more contact.

**What do you think about the government regionally and nationally? How is their relationship with the sector and new projects?**

I do not know. The government should have high interest. Here you put it with high power and low interest. Yes, it could be like this, it should be more interest. Do they have power? Yes, they do. Interest? They should, but I do not think they have it. Here we still have politics-related problems, the people in power are not that technical, it is more a way life to do politics. Now we are in the middle of a transition in government, the country is very divided. We went from a supposedly right-wing government to a supposedly left-wing government. I think that in here we do not have an idea of what is right- or left-wing. What I tell my students is that government should be socialism like in Norway or Netherlands, those are socialist countries, more left-wing, but democratic. Here we relate the left-wing with guerrillas, kidnapping, extortion, coca crops and we relate the right-wing with corruption, robbing and coca crops. I do not know, yes, they are fine: high power, low interest. It is where it should be.

There should be more and we should demand more to the government. Right now, in Risaralda, the governor is more or less located here, he has a certain interest in the agricultural sector. So, we could say that yes.

I do not know about the maritime industry, I do not know anything about it, we are very far away from the sea here, I do not know how their interest would be. I do not know why the biofuels that are going to be produced are for them and not for land?

**That´s the focus of our project, that the maritime sector should switch to a more sustainable system, they do not have more alternatives other than biofuels. And for example, land vehicles are easier to make them use electricity. That is not possible in the maritime industry. So, for that sector, that is almost the only option.**

In Colombia there´s ethanol production where they mix gasoline with maize and sugar cane, is that one of these biorefineries? Or is that a different thing?

**It is different,** unintelligible. **We cannot use it in ships,** **it is very** **pure** **to use it in ships (someone else)**

Okay, I get. I do not know much about the maritime industry. unintelligible.

What do you mean with communication platforms?

**Platforms that connect stakeholders in the sector, that perhaps have relations with the government or that can communicate.**

Give me an example.

**I do not think they exist in Colombia; I had the same thing where she said that such a platform does not exist in Colombia.**

unintelligible. Give me an example from another country.

**For example, in Spain where we went for our first case study there is an organization called** unintelligible **and they get together the different stakeholders in the sector and communicate...**

**A platform where there are biomass producers but also all projects, companies, industries, universities, come together and see what can we do with biomass: solid fuels, liquid fuels,** unintelligible.

Is it like a cluster?

**Yes, it´s a cluster. It doesn´t exist here in Colombia?**

No, not with coffee. I think we have a serious problem about cultural individualism. In Colombia you´ll see at the coffee farms that almost every coffee grower has their own processing plant. Other countries have places where everyone takes their coffee and there, they process it, so it´s easier to manage waste because everything is centralized, processes are standardized, costs are reduced, but here everyone wants to have their own processing plants, even the smallest farms. It is a cultural thing, we do not trust on others, “I want to handle it myself, because if not someone will steal it”, it is difficult to do a cluster, but we are making progress, someday we´ll get there. I don´t see this applied here yet.

**Applicable in coffee or in any sector?**

I don´t know because I know of coffee, I don´t know of other crops

There is transport of liquids/storage companies, I don´t know what do you mean with transport? Big numbers of carriers?

**Companies that could collect and transport biomass from the farm.**

**Transport of biomass from community to refinery** unintelligible

From here to there, each one does it with his/her own car from the farm or hire a driver, we have a driver we can trust on. There are some companies of rural transport, but I don´t know how much interest they may have. And power is low.

Biomass collectors, I don´t know them.

**Because every producer does it themselves.**

Yes, so I don´t know them

So overall I think everyone is well located, the only thing is that this one does not exist for me, and neither does this one.

**And Cenicafe is the same as Fedecafe?**

Yes, for me they are located there, they should be at the same place; either you bring this one down or pull this one up.

**Are there any missing stakeholders that could have interest or could play a role on a new value chain?**

Coffee threshers, they generate a lot of waste because the coffee that I take out of here still needs another process prior to exportation, which is threshing. Have you already seen dry coffee and that?

**Yes, we went to an association at Santuario.**

Well then you saw the coffee, those have a husk on top that needs to be taken out for export. I do not do that in the farm, in Brazil they do. I sell it here with that husk. The buyer who threshes it for export, generates a lot of waste. But that waste I buy from them to use as fuel for the drying process, so I use it directly as a fuel but without any process.

**You buy it?**

Yes, I buy it in the threshing places to use it in the coffee drying. Have you already seen some coffee processing?

**Yes, we have.**

Ok, so, where they are drying it, in like a warehouse with a huge fan that injects warm air in there, that can be put to work with “cisco”, which is the peel. Sometimes it is very scarce because the brickyards also use it, which are the companies that make clay bricks to build houses, so, they also use it to heat the clay. So, I do not think that “cisco” contaminates that much. That one could have competition, even sometimes there´s a competition between those of us who need it to dry coffee and those who need it to make bricks, there could be some conflicts. Who else is missing? I don´t know.

What will the stores where I drink coffee will be doing with the coffee grounds? I know that some people do some handicraft work with it, but that could be used as carbon.

**The spent coffee grounds? Yes**

**Is it produced in a** unintelligible, **in a centralized facility or something?**

**No, it´s more in the bars where they sell the coffee.**

Now, with the increase in price of fertilizers, because almost all the fertilizers that we use are imported from Ukraine, and they got very expensive because of the war. The recently elected president, who is kind of crazy as well, is saying that we should produce our own fertilizers.

It doesn´t exist yet, but there could be an interest in using the coffee pulp as raw material to produce fertilizers. There could be a new stakeholder, there could be a need to make use of this kind of waste in biofuel generation.

Also, if I were to put a plant like this, I would think is using manure from pigs or hens. A lot of small farms have pigs and hens for their own consumption, and they probably contaminate a lot, because I do not think that they dispose of that appropriately. One could see with them if they could collect the manure to be sold, and that could be much more efficient than pulp for gas production, but I don´t know how does your process work.

**Yes, it is different process, that needs lignocellulosic biomass.**

Ah ok, more like plant biomass.

**Yes.**

Well, then it wouldn´t work. But there should also be an alternative to use the manure from those pigs, because there´s a lot. It´s called backyard pig farming or poultry farming, which are people who produce to consume for themselves.

I cannot think of any other

**I have another question. You also participate in Fedecafe, like in congresses and such.**

Yes, I am a member of the board of director of Almacafe, which is a different organization but works together with Fedecafe. It is the company that exports Colombian coffee. Almacafe: Almacenes de Café

**Let´s say for this kind of project, we require technical people like chemical engineers, electrical engineers, mechanical engineers. In the region of Risaralda, do you have such people? Like students.**

You are in the UTP, we are full of engineers: mechanical, electrical, chemical. There´s lots of students and professionals.

**So,** unintelligible **for the whole department of Risaralda, we have people?**

Yes, we have a lot of people for that.

**Are there any industries in Risaralda? Chemical industry or biotechnology industry? Any company, big industry?**

Yes

**It can be even biodiesel, bioethanol, anything.**

Well in Manizales, Caldas, it´s not Risaralda but we are very close it´s the same region, we have a big industry, there´s chemical… Right now, I do not remember the names but there is a certain industry level, I do not know any related to the biofuel sector but there are chemical plants. Here we had, I don´t know if it still exists, BASF, which produced agricultural supplies, they had some laboratories around here. I do not know but at Manizales there´s a big industry, we could find out what kind of industry we have, like chemical.

You are interested in chemical industries? I think Diana would be more helpful with that, I am very focused on coffee.

**You said maize are used as inter-cropping.** unintelligible **coffee, bananas, maize. Is it common in all the coffee region?**

Yes, it is relatively frequent to see…

**What do they do with the maize waste? Like the corn Stover?**

I don´t know, they leave it in the plot as organic fertilizer, for it rot there. That will control the weeds for a while because it doesn´t let them grow, then it rots and generates a vegetable layer.

**Do you think if you put the residues in the field, everything goes to the field?**

I am not sure about that, but…

**But they believe it.**

Yes, because that could also be damaging, right? To leave all that there.

**Yes, if they think that all the organic matter is…**

Integrated into the soil? I do not think that all, but people must think otherwise, but I do not think that everything is integrated into the soil.

**He doesn´t think so but people believe it, it is also a way to just get rid of it.**

**Yeah, I am just trying to understand because if it is a belief, then we have to convince people to take some…**

I did not understand.

**We plan to use residues, right? If people don´t want to sell it or something, then it´s an issue.**

Ah, but they don´t sell it because there no one to buy it. But if you are going to buy it, I´ll sell it. The thing is that collecting that will cost something, collecting and transporting it will cost something, I do not know if you will buy it at a price that will cover the collection and transport, which are expensive because it is done by hand there are no machines to do it, it is not mechanized, we are a in mountainous area, so, if you want me to sell you all the maize waste I have to collect it with people whom I have to pay 50,000 pesos per day. If they are paid 50,000 pesos per day and they collect 300 kg per day, that´s already a lot of money per kilo. Add to that the transport. How much do you think that you can pay for a kilo of maize waste?

**We would need to make some research on that.**

That´s the thing, that´s why they don’t sell it. There was someone who told me that they would buy a little to give to some horses. But I told him, “I will sell it to you, but you go pick it up”. unintelligible but it is cleaning the land. If you are going to ask me to pick it up… to take the pulp to a place you must pay…. I pay to a worker 50,000 pesos per day, if it´s for pulp I pay around 100,000, because it is horrible to work with pulp. If they are married, only after working 1 week with this they get divorced, because they end up smelling terrible.

You must pay it very well, and then I´ll see if it covers paying someone else to collect it, take it to the biomass plant. How much will you pay me for that? Those are the numbers I need to check. I do not know how much can you pay for a kilo of coffee pulp or for a kilo of banana stem or for a kilo of maize waste. The important thing is on the price, how much will you pay, to see I can pay for the collection and transport.

**What do you do with the residues of banana? Because we just eat the bananas, right? The rest of the leaves, stem..**

That is left on the land, everything is left there to rot.

**What is your background as a professor? What is your expertise? Are you an engineer, agronomist?**

I am a veterinarian and zootechnist, and I have a specialization in finance. I have an MBA in projects.

**And coffee producer, impressive!**

**Coffee is your family business?**

Yes, we are 3rd generation.